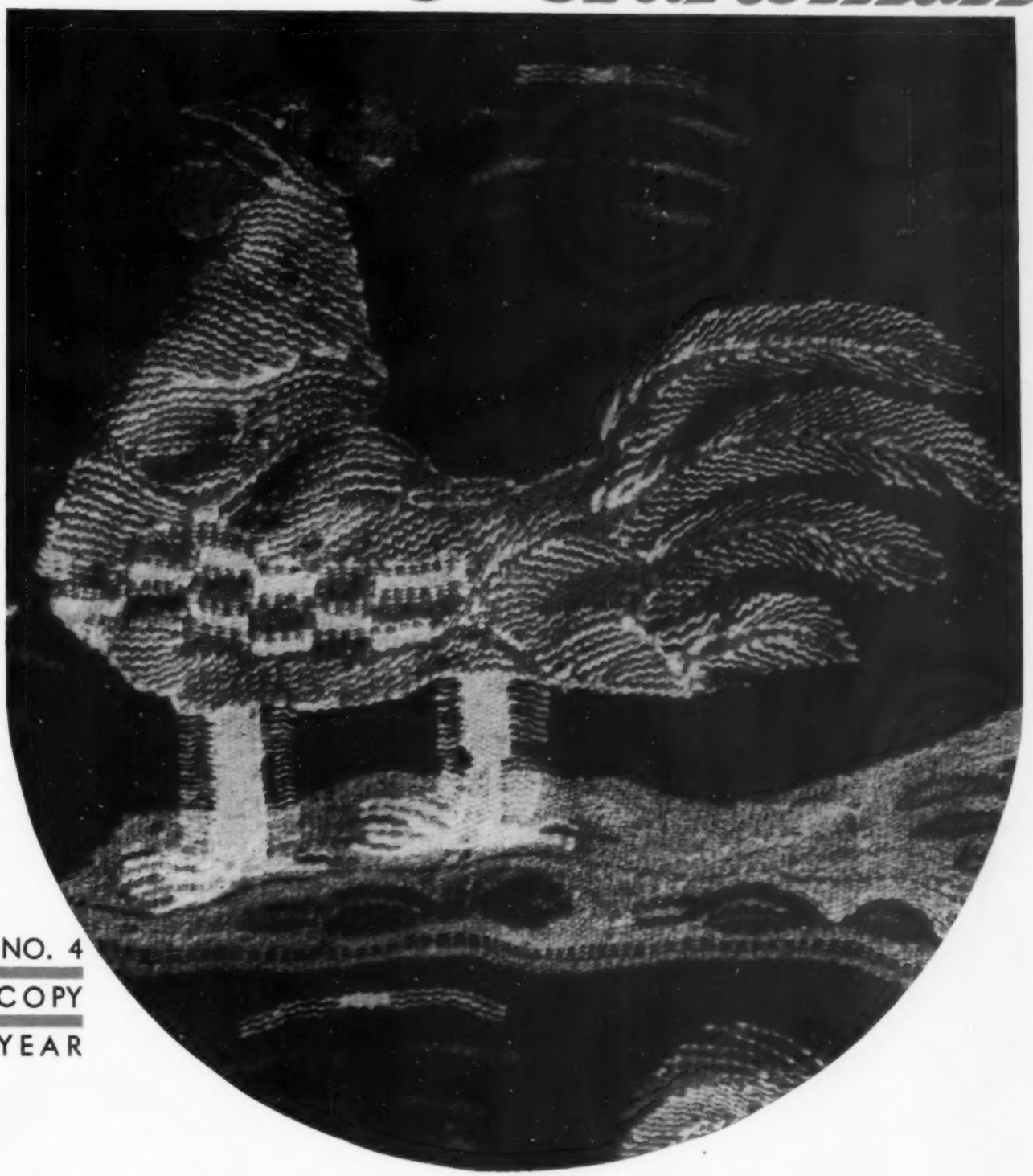
FALL 1952

Handweaver & Craftsman



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Handweaver & Craftsman

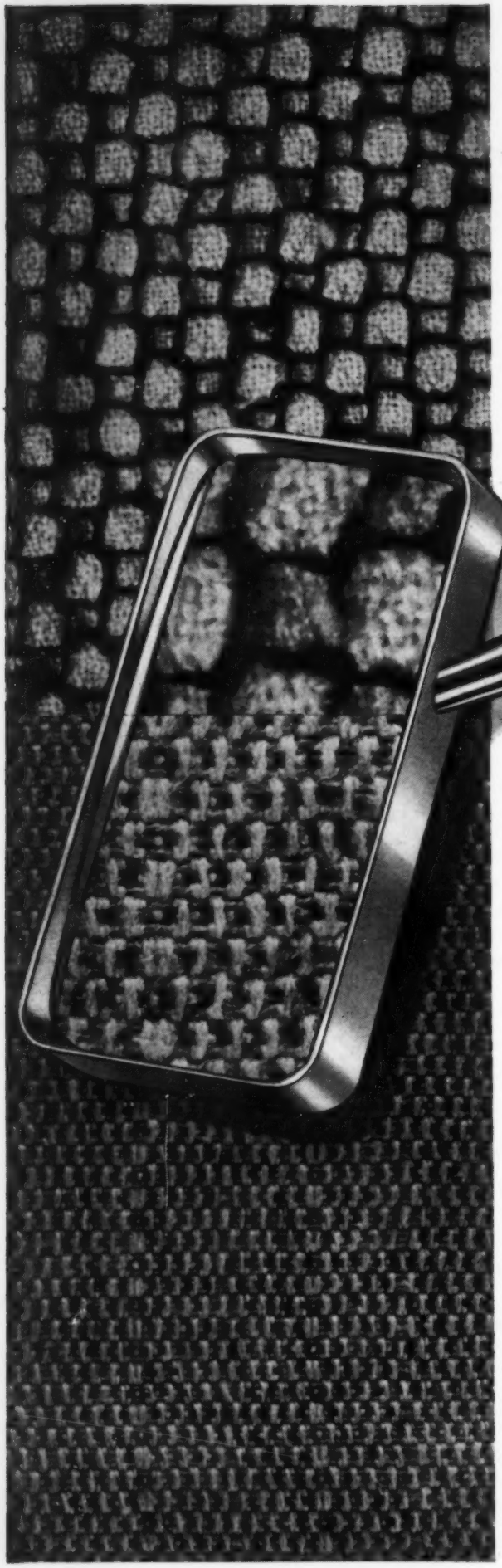
Editorially Speaking

"Learn to weave and then come back and apply for a job." That was the advice given recently by a textile manufacturer to a young woman graduate of a textile course which did not include handweaving. His attitude represents almost a revolution in textile designing for power loom production. The return of the handloom to the industry has come with almost a shock to the technologists who, with the development of more and more complicated machinery for the production of more and more varieties of fabrics, had consigned the handloom to complete oblivion. Machines, however, cannot design fabrics. That is still the function of the human being and the human being who is an artist-craftsman in weaving. Designing on the handloom is not only a more flexible method, but also a considerably more economical one.

All along we have been saying that the artist-craftsman who works in the fields of fashion and home-furnishings must be *ahead* of the commercial market. And that the craftsman's purely creative work is often the forecast of things to come in mass production. Take stoles, for instance, which are beginning to bore handweavers, more or less. The early forecasts of the top Paris fashions for winter showed large stoles being used for almost every purpose, heavy woolen stoles with coats and suits, light filmy models for evening, in-between stoles for afternoon and daytime wear, using designs reminiscent of those the best handweavers in this country have been producing for the last few years, before stoles began to come off power looms. Handweavers are still making stoles, using unusual combinations of materials and colors, developing interesting textures, turning from elaboration and designs heavily weighted with metallics to beautiful plain weaves and colors and fine sheer weaves, making them for those people who want something that is even farther ahead of the market than the Paris couturiers.

"What kind of loom shall I buy?" That question comes our way frequently, especially from people who do not know how to weave but who think they would like to learn. Buying a loom, as we have doubtless said before, is something like buying an automobile. Some like one kind and some another, for various reasons, often depending on *where* and *for what* the automobile will be used. The important thing for the weaver to understand is the principle of handloom construction which has not changed since the first handloom emerged from prehistoric mists. There are all sorts of variations, table and floor looms, steel or string heddles, tensioners and all sorts of gadgets which some weavers think speed the process, but the original principle remains unchanged. Excellent "contemporary" materials are being woven on eighteenth century "barn" looms, which have at least one advantage over their lighter weight successors—they don't move around all over the place. In fact, just try to move one! When you are buying a loom, remember, it isn't the loom, it is the weaver who produces the cloth. The loom is simply the instrument and cannot do any more than its operator demands. Our advice, for what it is worth, is to try out as many different kinds as possible, and then choose the one which seems most suitable. The weaver also must realize that there is no "quick cooking" process in learning to weave and no magic piece of equipment which will take the place of knowledge of tools and materials and of experience.

In memory of the late Ann Muller, the Harrisburg chapter of the Pennsylvania Guild of Craftsmen awarded a prize for overall excellence for work in the annual exhibition in connection with the summer craft fair at Carlisle. Mrs. Muller's death, which occurred last spring, not only is deeply regretted by Pennsylvania craftsmen, with whom she was associated for many years, but by all those who knew her in New York where she was designer for John Walther fabrics before she went to Mexico last December. An exceptional weaver herself, she was intensely interested in the work of other weavers and in the advancement of the craft. *Handweaver & Craftsman* has lost a firm friend and a valued contributor. The prize was awarded to Paul Eshelman, outstanding craftsman in wood, whose work is marked by great simplicity, graceful lines, and sound mastery of his material. He also was given a distinguished craftsman's award for a cherry wood bowl. Mr. Eshelman is president of the guild.



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Handweaver & Craftsman

MARY ALICE SMITH,
Editor

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Tapestry by Krystyna Sadowski, Indian Harbor, Nova Scotia, Canada, shown last spring with an exhibition of crafts from the provinces of Nova Scotia, New Brunswick, and Quebec at the Canadian government showroom in Rockefeller Center, New York.

Picture credits. Pages 4-7, George D. Cowdery, New York. 7-8 M. H. de Young Memorial Museum, San Francisco. 9-11 Edward Schwartz, New York. 26-27 Elva F. Hodges, Philadelphia. 31 African Modern, New York. 33 B. Altman and Co., New York. 43 Rya rug, The American Swedish News Exchange, Inc., New York. In Summer, 1952, issue, 22-23, photographs Mexican weavers from Cooper Union Museum collection, New York.

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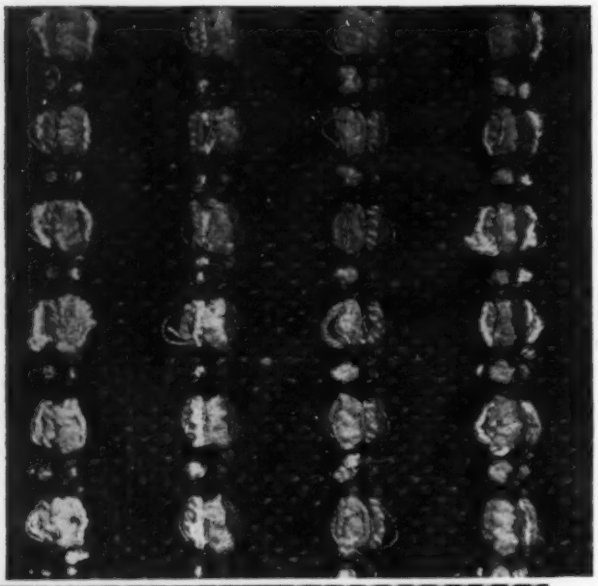
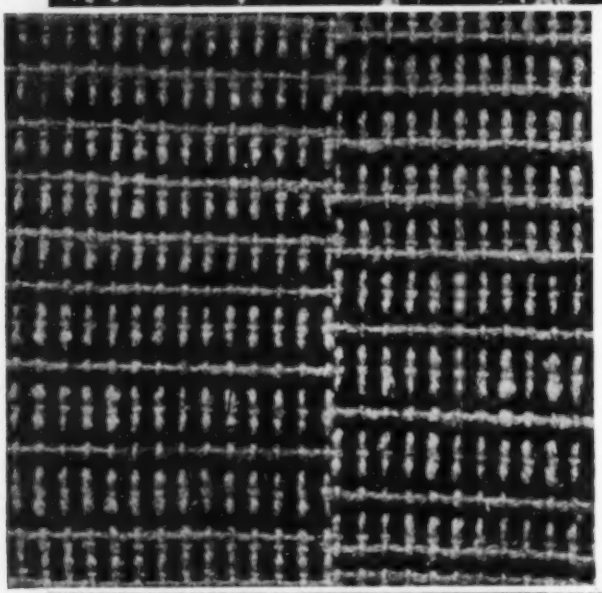
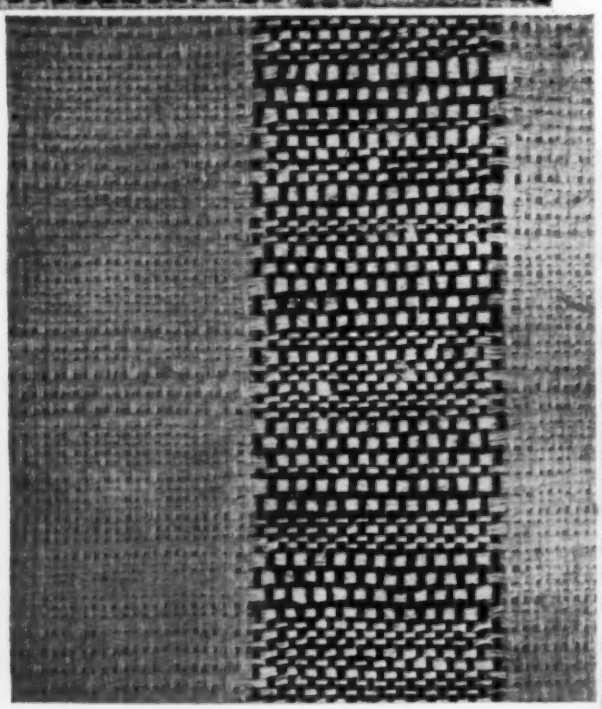






Exploring Weaving Techniques

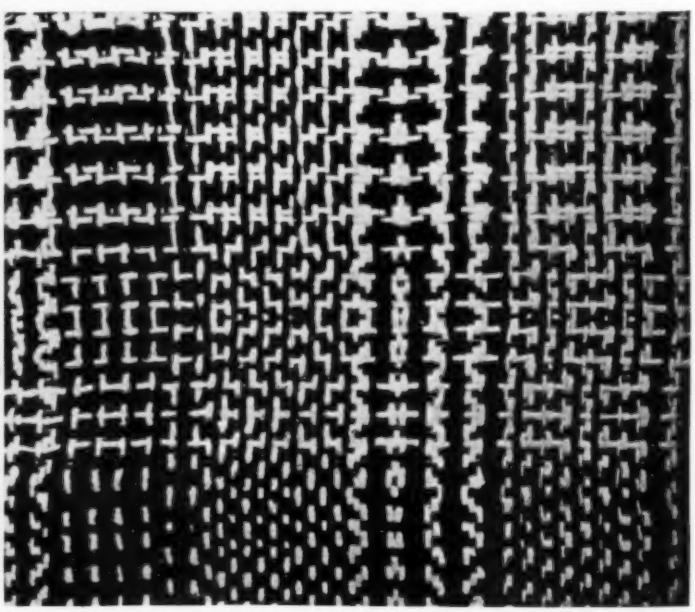
by JACK LENOR LARSEN

Although some weavers and textile workers have developed, in their mind's eye, a clear picture of relationships between weaves, most of us have been content with a long or short list which perhaps divided plain and twill weaves from "pattern" weaves. Actually a concrete classification can be made—one from which generalization and inference can be drawn, and which will help us in using fabric constructions constructively. Much of the classification included in this article was inspired by work done under the direction of Prof. Grace G. Denny at the University of Washington, Seattle.

Almost weekly weavers write this magazine requesting information about weaves, about the *basic weaves* or about particular ones. And why shouldn't they? A beginner just becoming familiar with the diversity of patterns in pattern books, or the endless array in commercial and handwoven fabrics, may rightly ask if the number is infinite. If all these designs were woven only in the same weight of black and white string, an enormous variety would be achieved. But when one considers the camouflages of scale, yarn, and color, which the weaver may employ, the increase in number of patterns indeed seems endless. It may even seem easier to these weavers to adapt the tabby weave formulas of contemporary manipulation or to follow thoughtlessly their little selection of pattern recipes, than to think out threadings or to sense the magic interplay of harness movement.

On the other hand, the old timers, so well aware of each weave's idiosyncracies, may not be too aware of the relationship between weaves. Strangely enough, it may

Reading down. Warp pattern weave. Dark and light alternation in plain weave. Weft pattern weave combined with warp stripe. Center, left and right. Experimental fabrics, variations on twill weave in black and white string.



seem to some weavers, the basic weaves are not honeysuckle, rose path, summer and winter and bronson. The basic weaves are only three: plain, twill, and satin. In addition there are some secondary weaves; and many weaves derived from the basic and secondary.

Below is an outline of weaves as they relate to one another. This framework of reference is not a reader's intermission. It is the essence and thesis of this article to demonstrate that the unity of weaves is more resolute than their diversity. For in the very definition of woven fabrics, we find the key and solution; the weaving pattern is either construction for cloth or a construction plus ornamentation.

The following is a convenient classification of weaves:

BASIC WEAVES

Plain (Taffeta) Weave. Threaded 1, 2; 1, 2. See secondary derivative classification.

Twill Weave. Threaded 1, 2, 3; 1, 2, 3. Three, four, five, or multiple harness twills: reverse twills (herringbone, diamond): fancy twills: steep twills.

Satin Weave. Threaded 1, 3, 5; 2, 4; 1, 3, 5; 2, 4. Warp face satin: weft face satin (sateen).

SECONDARY WEAVES

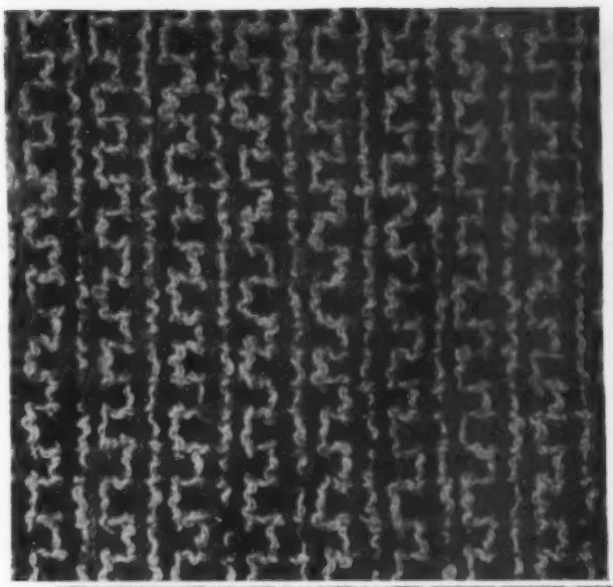
Pattern Weaves. Threaded 1, 2; 1, 2; 1, 2; 3, 4; 3, 4; 3, 4. (Such as M's and O's, mock lenos, bronsons, huck, honey comb).

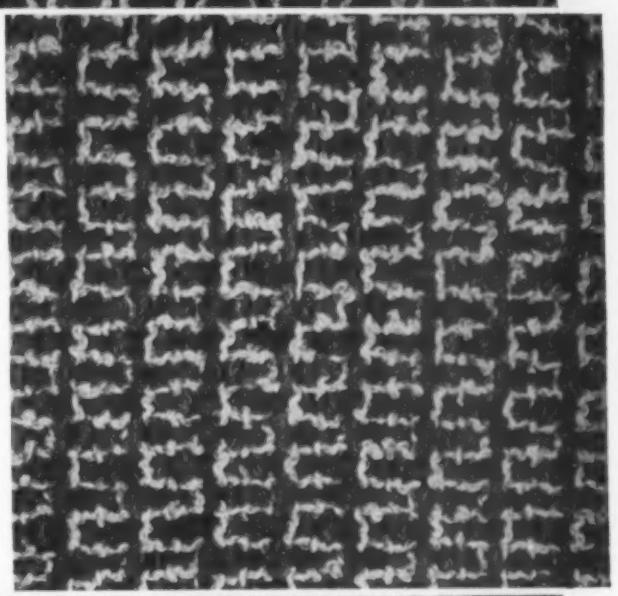
Gauze Weaves. Threaded 1, 2; 1, 2; 1, 2. (Cloths in which pairs of warp yarns twist between weft picks.) True gauze: leno: finger lace (Brooks' bouquet, Spanish lace).

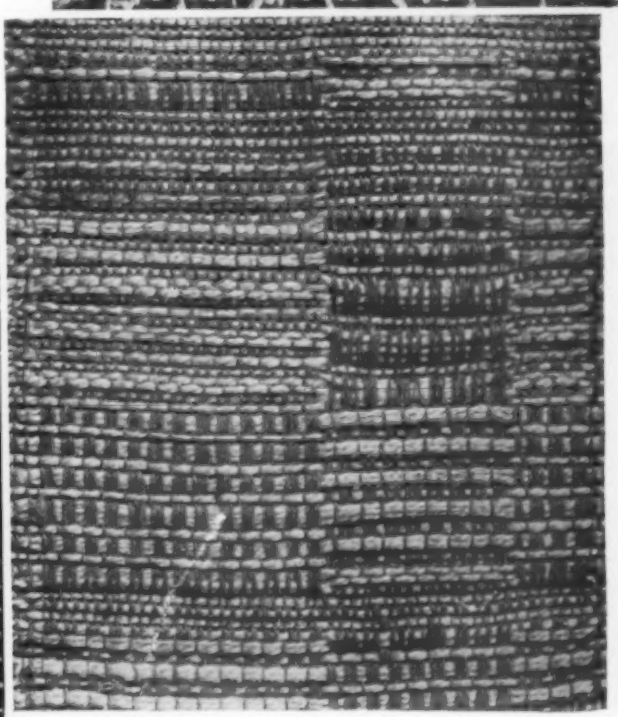
DERIVATIVE WEAVES

Double Cloth. Threaded 1, 2, 7, 8; 3, 4, 5, 6. (Blanket weave, Finn weave). Triple cloth: quadruple cloth: tubular fabric.

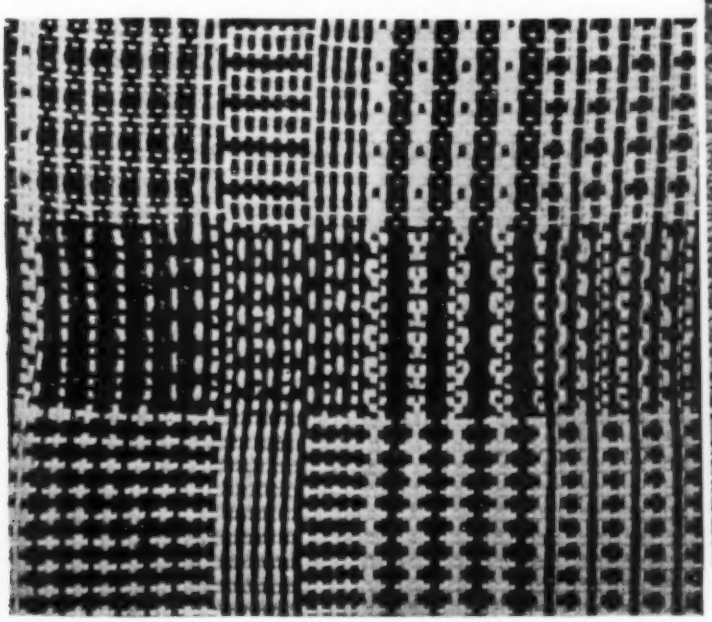
Brocade. Threaded 1, 2, 4; 1, 2, 3. (Supplementary warp or weft for pattern in addition to plain weave background). Weft pattern, continuous (selvage to selvage), overshot: spot: summer and winter: crackle. Discontinuous: dukagang: laid-in. Warp pattern (any continuous brocade with supplementary pattern float in warp). Warp and weft pattern (supplementary yarns







Reading down. Structural pattern derived from twill. Reverse of twill weave above. Weft pattern weave.



in both warp and weft).

Damask. Threaded 1, 2, 3, 4; 8, 7, 6, 5. Twill damask: satin damask.

Tapestry. Slit (kilim): interlocking: locking around common warp.

Pile. *Knotted;* flossa, rya, Ghiordes, Sehna, Spanish: unknotted; weft loops warp loops (terry cloth, shag rugs, other double beamed cloths); velvet.

A secondary derivative classification can be made of effects not dependent on weave proper, but in variation by:—1. Grouping (carrying two or more yarns as one) a. weft, b. warp, c. warp and weft (basket); 2. Spacing a. warp (1) weft, face, repp, (2) skip-dent, b. weft (1) warp, face, repp, (2) irregular beat-up, (3) pick-skip; 3. Color, a. stripe, b. plaid (check), c. alternating yarn colors (tweed, log cabin weave), d. uneven yarn dye (ikat).

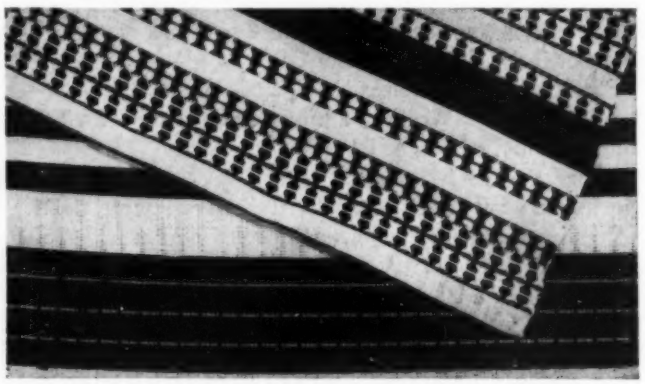
These effects are most common in simple weaves, but not limited to them. In general they are easily obtained, and can be used to enrich and elaborate fabric when used with other techniques. A Sicilian piece, for instance, was a black and white checked material with varying colors of inlay, or a single flossa knot in some squares. An effect as rich of inlay and flossa alone would have required ten times the labor. Many "weavers' own" expressions can be derived from hybrids of these secondary derivatives with other techniques.

Plain woven cloth contains the principle upon which all cloth is fabricated by the over-under crossing of warp and weft. Twill and satin weaves are the same except that the over-under sequence is staggered asymmetrically. A twill or satin in which the weft yarns float on one surface is reversed in threading and treadling to become a damask. Unfortunately the simplest damask block requires six harnesses, but the possibility of this weave alone compensates for the addition. Fine and bold effects can be obtained with these simple blocks without venturing into the 32-harnessed European damask loom with its tendency toward intricacy and decadence. The weave has the advantage of juxtaposition of two colors without the sometimes superficial quality of a brocade.

I imagine that thousands of weavers do not think of overshot patterns as brocade. But they are. A brocade is based simply on a pattern yarn used over plain weave. Picking out these supplementary yarns will reveal the plain web underneath. This very notion of brocade as being a sort of decorative embroidery could help us in designing, for all we have to do is imagine (with the help of graph paper or a darning needle) the effect of overshots on the plain ground. In weaving we will have only the minimum limitations of one overshot for each harness. The first possibility could be squares or stripes; these in turn, may be changed to plain squares within overshot squares. For those weavers who delight in the seeming magic of patterns growing in their fabric, why not start out in a free manner with the darning needle or rows of lines instead of limiting oneself to an overworn threading? Consider the possibility of pattern yarns running in the warp to permit weaving with one shuttle; or what would be the outcome of pattern yarns in both warp and weft? My suggestion would be that the experiments be uncomplicated, unlike any patterns as we know them, and with yarns heavy enough to make a showing for the effort. Let the elements come from outside our weaving sphere; see if polka dots, crosses or triangles can be woven. Gain freedom through remembering that some fabrics, like upholstery, may have under floats of unlimited lengths.

Pattern weaves (see classification) such as bronson, huck, and mock leno, are like eccentric twills; their difference is in their breaking away from a continuous repeat of a few yarns to embrace the potential of spots, blocks, or figures.

Except that it may be used in stripes or through a pick-up technique, double cloth is a weave for eight or more harnesses, but based on plain weave. In fact, it is the epitome of plain weave for not only are the individual picks and ends plain woven, but the very checker board is of the same principle: Cloth on the underside of one checker appears top-side on the block adjoining. The simple checker board of eight harness double cloth can be varied through striping of warp and weft and through adjustment of proportion. In other words a plaid, or



Double weave fabric in black and white mercerized cotton, designed and woven by Lore Kadden, New York City. A combination of double-plain weave and leno, superimposed on plain weave. Suitable for drapery or partition fabric, since the reversed side is quite different and shows only broad black and white stripes without leno.

Mondrian, can be accomplished. The virtue of double cloth is that each area can be solid without the half-tone areas of ordinary plaids and stripes or of damasks and brocades. To my knowledge, only a truly experimental approach to double cloth has been manifested by Anni Albers and Berkeley's Ed Rossbach. I believe they will vouch for the untapped possibility. Nothing has been done, for instance, in double weaving, in which one cloth could be shiny and the other dull. What of a fabric of real gold yarn juxtaposed to areas of rich-dull waxy silk?

In American handweaving, tapestry techniques have been more avoided than perhaps in any other culture; and time is the culprit. I wonder if the technique is at fault or the traditional application in which thirty picks are a minimum and each of these is bubbled to disguise the fact that the fabric has a warp element. Finland's Marta Tiepoli and Loja Saarinen suggest that tapestry warps are not a type of underthing and can be exposed rather decently. With them and with contemporary Polish tapestry, is revived the technique of eccentric weaving in tapestry. This technique implys beating up irregularly with a comb; for instance, a circle is woven back and forth without inter-joining, while the back-ground is

(*Continued on page* 60)

West Coast Shows

WEAVING

in Modern Interiors

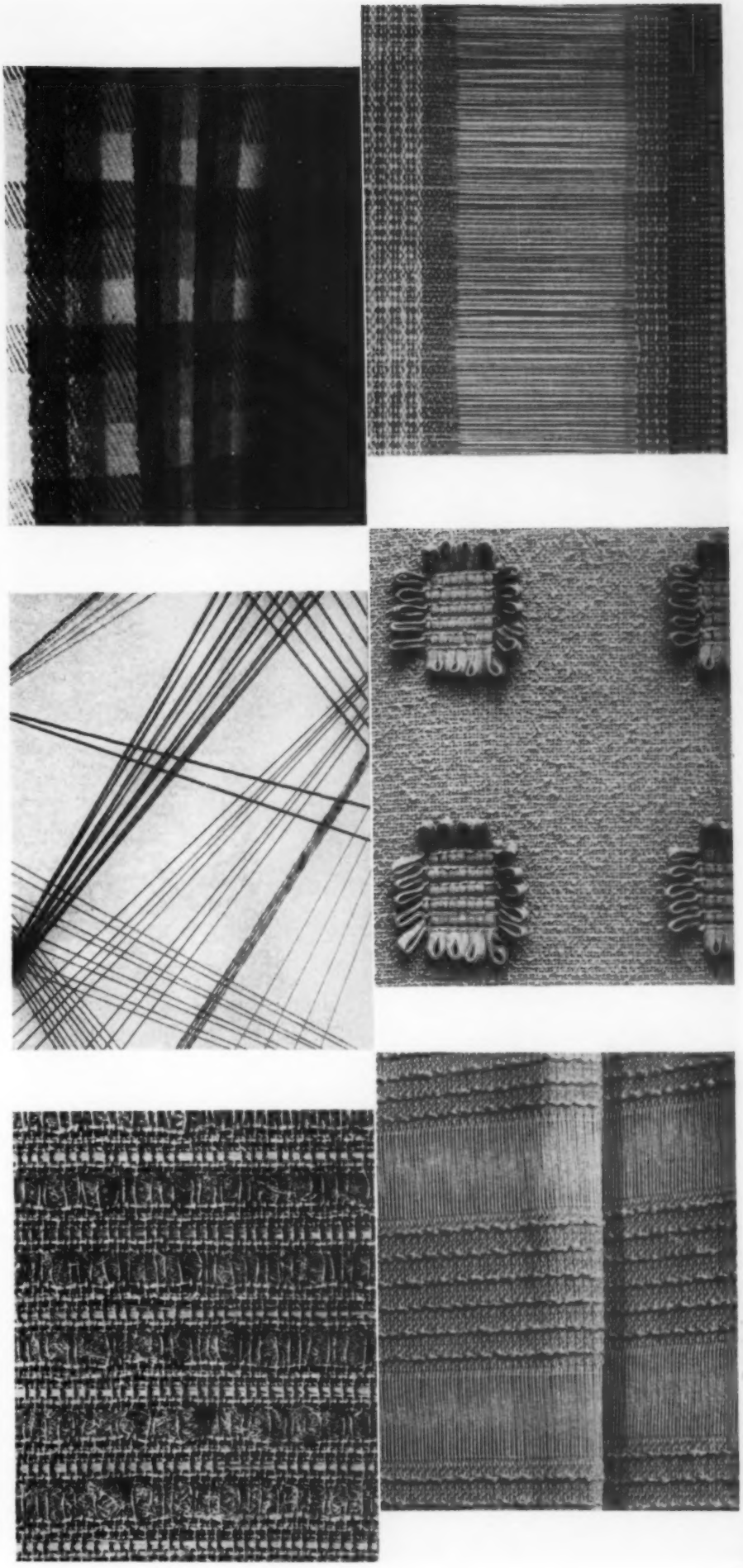
by DOROTHY BRYAN

Interior settings, demonstrating the practical use of handwoven fabrics as well as the beautiful and original effects that may be obtained when decorator and handweaver co-ordinate their efforts, were a main feature of the Fourth Annual Exhibition of the Contemporary Handweavers of California, held June 25 to August 3 at the M.H. de Young Memorial Museum in San Francisco. Also shown were decorator and clothing fabrics and a few handwoven garments.

Both contemporary and period settings were shown and even some fanciful ones, designed for dramatic effect rather than as real rooms to be lived in.

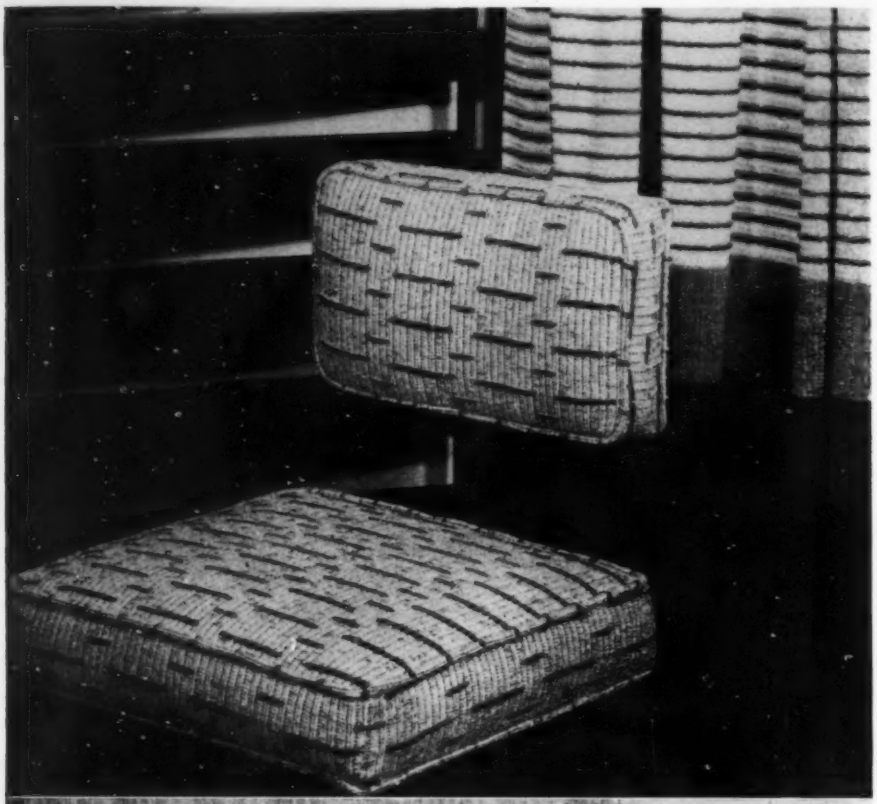
Interesting, from the weaver's point of view, was the fact that instead of a predominance of twill threadings which have been characteristic of this group in the past, was the increasing use of a wider variety of weaves. Combined with the skillful handling of yarns and color, the results in many cases were fresh and new.

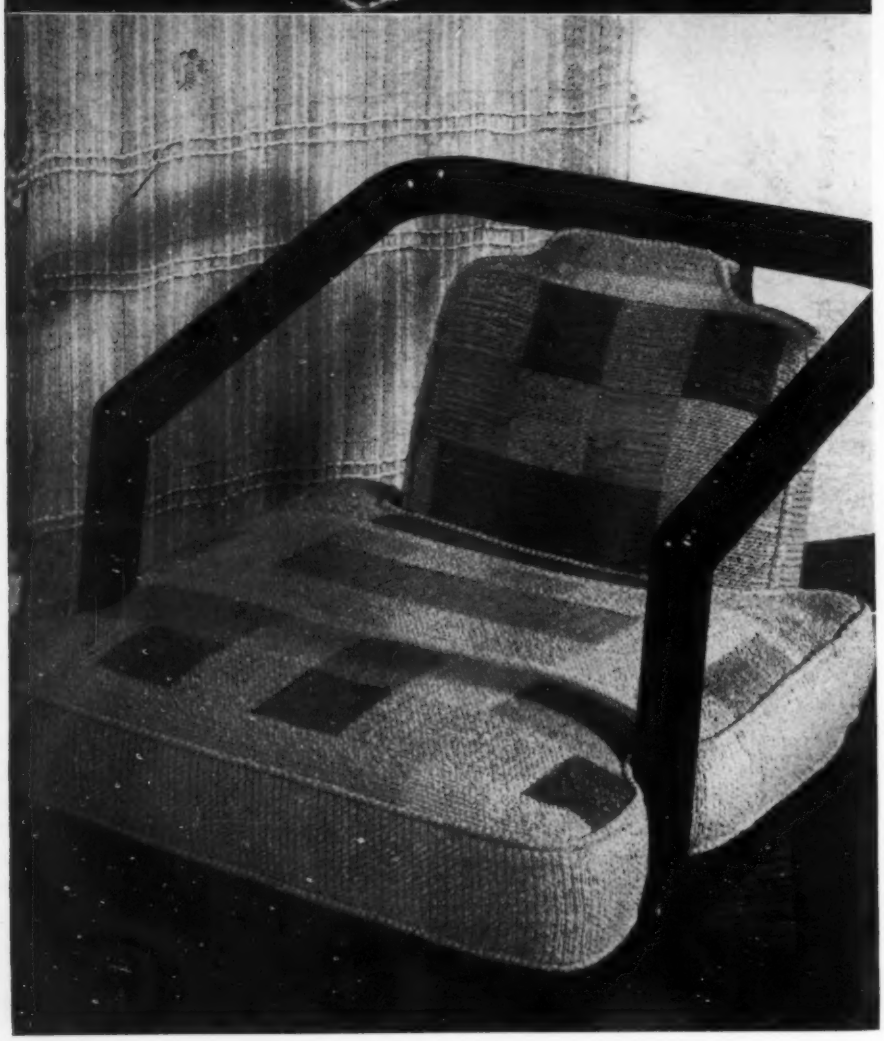
For a contemporary dining room setting designed by Clyde Des Sain of W.&J. Sloane, Constance Tydeman achieved a warm gray casement, sparked with a scattering of small black dots, by a subtle blending of natural, white and gray linen with a



Left to right, from top. Black, white, and gray plaid coating, wool, silver threads in gray, by Marjorie Gavin. Window shade, green peeled bamboo, grouped warp of Chenille, novelty rayon in greenish gray and orange, gold metallic, purple cellophane, by Margaret Kingston. Abstract in chenille, silk, novelty cotton, mohair by Ruth Howard. Sofa upholstery by Frances Morgan. Hanging with warp of heavy pearl cotton, 8 to inch, weft of black wool, novelty white and yellow pearl cottons, yucca and Spanish moss, by Rosalind Ray Watkin. Curtain, with rich cream tan cotton warp, 15 to inch, 4-inch weft bands of fine linen and novelty cotton, twill variation, by Margarita Dan.

black and white nubbed rayon. Runners on the glass-topped wrought-iron table were set in M's and O's with a black warp and clear cellophane weft, treadled to give a checkered effect. Hilda Dial who wove the runners also wove the upholstery for the chairs, using the same draft for a linen warp that was arranged in shaded stripes from off-white to natural and treadled like twill to produce a smooth firm fabric.





An informal or lanai diningroom setting by Luther W. Conover had walnut furniture with black wrought-iron legs and used black and orange fabrics that blended with the wood and metal. Rosalind Ray Watkin, who wove the upholstery and runners, used a double-beam loom with black on one beam and black, orange, and yellow set in narrow groups alternating with ⅜ inch open spaces on the other beam. For the upholstery, weft yarns were yellow and orange nub, resulting in a tweed-like fabric. Using only one beam with the grouped warp for the runners, she achieved a harmonizing fabric with a firmly beaten weft of alternating orange rug cotton and rust rayon boucle. A walnut side-board had fabric panels in the doors which Mrs. Watkin wove of orange warp with weft of alternating half-inch stripes of orange and yellow suede, separated by very narrow rows of black and orange cotton. Resting on the side-board was a lamp with a shade made by Elsie Wood of fine reeds dyed brown on a warp of warm tones in browns, tans, red-orange and gold, arranged in bands graduating from narrow at the top to wide at the bottom. On the wall over the side-board was a brown and natural raffia wall-hanging by Louis Gross. Done in double-weave, the hanging had a geometric abstract design picked up in the brown and was fringed on all sides.

Another contemporary dining room setting, part of which is pictured here,

Top. Upholstery for chair by Elsie M. Wood, warp of black, white, and yellow cottons and weft of green, gold and white cotton, dark green rayon nub, alternative short and long stripes medium and dark yellowish green chenille. Matching drapery by Ruth Howard, same colors. Background weft, 2-pick stripes of rough and smooth cottons, yellowish green, and salmon pink with single shot of gold, broken by stripes of heavy chenille. Border of the two green chenilles. Below, upholstery and sheer curtain material by Ella Parker, see text.

(*Continued on page 59*)

The Evolution of the Multi-Loom

by EDITH H. BROKAW O.T.R.

The attitude toward any craft including hand weaving is definitely influenced by the purpose for which it is used. The selection of equipment and techniques as well as the products will vary greatly, depending on whether the individual is interested in weaving as a possible source of economic return, a fascinating avocation, or as a therapeutic tool to promote physical or mental health. The primary interest of those in the first category is the expeditious production of fabrics with a desirable market value. Not having to consider either time or economic factors too heavily, those in the second category are probably intrigued with either the creative or mechanical possibilities of weaving. Occupational therapists do not disregard the interests of either of these groups but they are especially concerned in what the act of weaving can contribute to the treatment of the patient. Handweaving is one more tool in their medicine kits. The colors chosen, the coarseness or fineness of warp and weft, the simplicity or complicity of weave involved may contribute to the improvement of the nervous or mentally ill patient. The size, weight, and method of manipulation of the loom used can all be made part of the exercise needed to strengthen muscles, increase joint motion, or improve co-ordination.

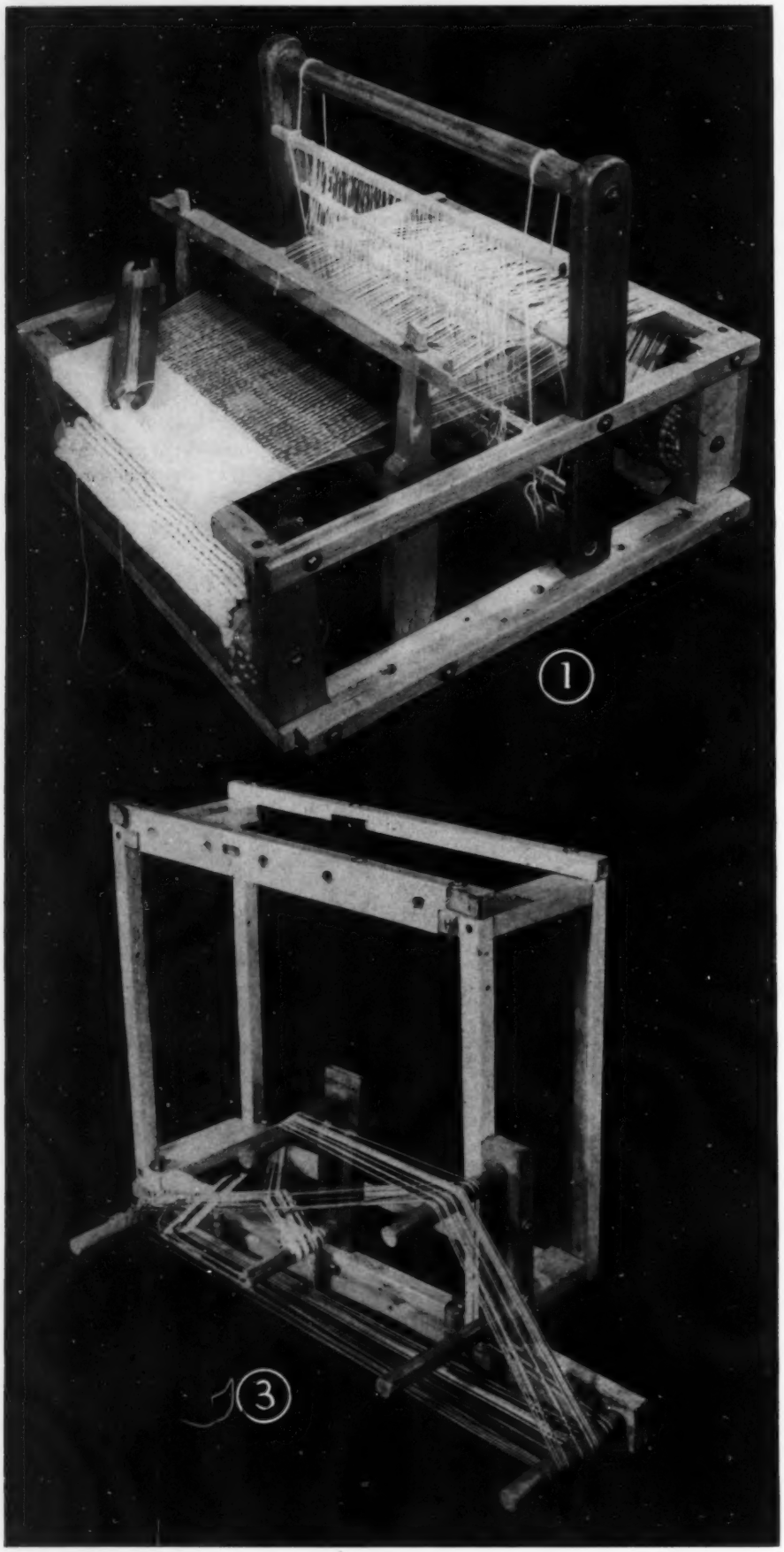
When, for the author, the task of instructing occupational therapy students in elementary weaving as well as elementary woodwork and other smaller crafts, was superimposed on her interest in weaving both as an avocation and as an occupational therapy medium, the idea of the multi-loom was conceived.

So many are the activities and so varied are the crafts which the therapist must know, it is not possible for her to be a master craftsman. But if she is to use them effectively with her patients, she must know the basic techniques and she must acquire a reasonable amount of skill to be able to teach her patients. Basic techniques can be simplified and taught in a short time but there is only one thing that develops skill and that is practice. Practice takes time and in the case of some crafts, requires certain equipment such as a frame or loom. The crowded curriculum of the occupational therapy training course allows very little time for practice; the present high cost of education does not leave the average student the where-with-all to purchase expensive equipment; and dormitory space either at the schools or clinical training centers is usually too limited for much extra personal equipment. In dealing with patients there are often advantages to be gained if the patient can follow through at home with crafts learned in the hospital but here again appear these problems of economy and space. In fact storage space in most occupational therapy departments is so limited that equipment that can serve more than one purpose is most welcome. It was in an effort to meet these challenges that the multi-loom was developed.

Taking a simple 2-harness loom of the roller type as the basis, a loom was planned simple enough to be constructed with hand tools in a home, school, or hospital workshop, but so built, that it could be taken apart and packed flat for storage or transportation. Since it was also to be a woodwork project the original model (See Figure 1) was built of easily obtainable materials suitable for the use of hand tools. The lumber was clear pine strips ¾" thick and 1¾" wide and strips ¾" square which are stock sizes in any lumber yard. Stock hardware is used throughout. The bolts vary in length but are all the same in diameter. By using string heddles and substituting plastic take-up wheels for metal rachet wheels, the only part that must be purchased

from a weaving supply house is the reed. This loom has proved its worth as a woodwork project as in the building of it a wide variety of hand tools are employed and the basic joints are incorporated in its construction.

The front and back ends, the castle assemblage, and the beater are built as rigid frames. The top and bottom side strips bolt fast to the ends. The beater bolts to the bottom side pieces and operates by pivoting on the same bolts. The bottom ends of the castle uprights are cut into tenons which fit into holes cut in the bottom side pieces. Notches are cut in the top side pieces so that the castle assemblage just slides down into the frame. Further stability is given by bolts where the castle uprights cross the top side pieces (see Figure 1) The warp and cloth beams screw into the ends with long screws and a simple nail acts as a dog to anchor the plastic take-up wheels. Two pieces of No. 18 seine cord are used to attach the heddle sticks to the rollers and are fastened to the top roller with number 8 carpet tacks. These cords are not attached to the bottom roller; they pass under it like a sling. Thus the movement of the harnesses is accomplished by rolling the top roller back and forth. In the use of the loom for some occupational therapy treatments it is desirable to produce the action by moving the botton roller and in that case the tieup can be reversed and an additional cord can be attached to the center of the bottom roller. This cord should pass around the roller in both directions and have two ends, so that when one end is pulled one harness is raised and the other one is lowered and vice versa. No. 6 seine cord or carpet warp can be used for string heddles. If carpet warp is used the heddles should be stiffly starched .



A good way to start teaching the basic techniques of hand weaving is to use a picture frame loom. The front frame of the loom served admirably for this purpose. A piece of masking tape can be applied to each end of the frame and the spacing of the warp threads marked on it. Wound with carpet warp in a figure eight, the principles of warp, weft and shed are explained and the basic weaves such as tabby, basket weave, twills, are demonstrated. Then certain finger techniques such as Turkish knot, soumak, and tapestry are worked in small projects. All this leads naturally into the evolution of the other parts of the loom.

The next need was for a warping frame and this was achieved by turning the loom on its end and inserting dowels for warping pegs in the bot-

tom side pieces. The problem then was to be able to wind a 5-yard warp with the lease in the correct position but at a comfortable distance from the starting peg. To obtain this two extra wood pieces (one straight and one a right angle, as in Figure 2) were bolted fast to the bottom of the front end which is now the top of the warping frame. This gives the starting peg at the top of the right angle and four pegs across the top of the frame. Figure 2 shows this quite plainly. For the sake of clarity in the photograph all the necessary pegs to assure a 5-yard warp were not put in. You will also note that the beams, beater, castle and weaving shown in the first picture have been removed though it could have been used perfectly well as a warping frame with the weaving left in place.

It has always seemed that the inkle loom was an outgrowth of the warping frame. Therefore it did not require much imagination to turn the frame on its side and shift the two extra wood pieces and bolt them fast to one of the bottom side pieces and an inkle loom is formed. (See Figure 3) The inkle loom accounts for the two sizes of pegs shown in the warping frame. The increased tension of the inkle warp seemed to require heavier pegs and the difference in the size of the holes indicates their placement. It will also be noticed in the photograph that the warp threads pass under the tension peg rather than over it as they should. This was done in order to show the set up of the frame more clearly.

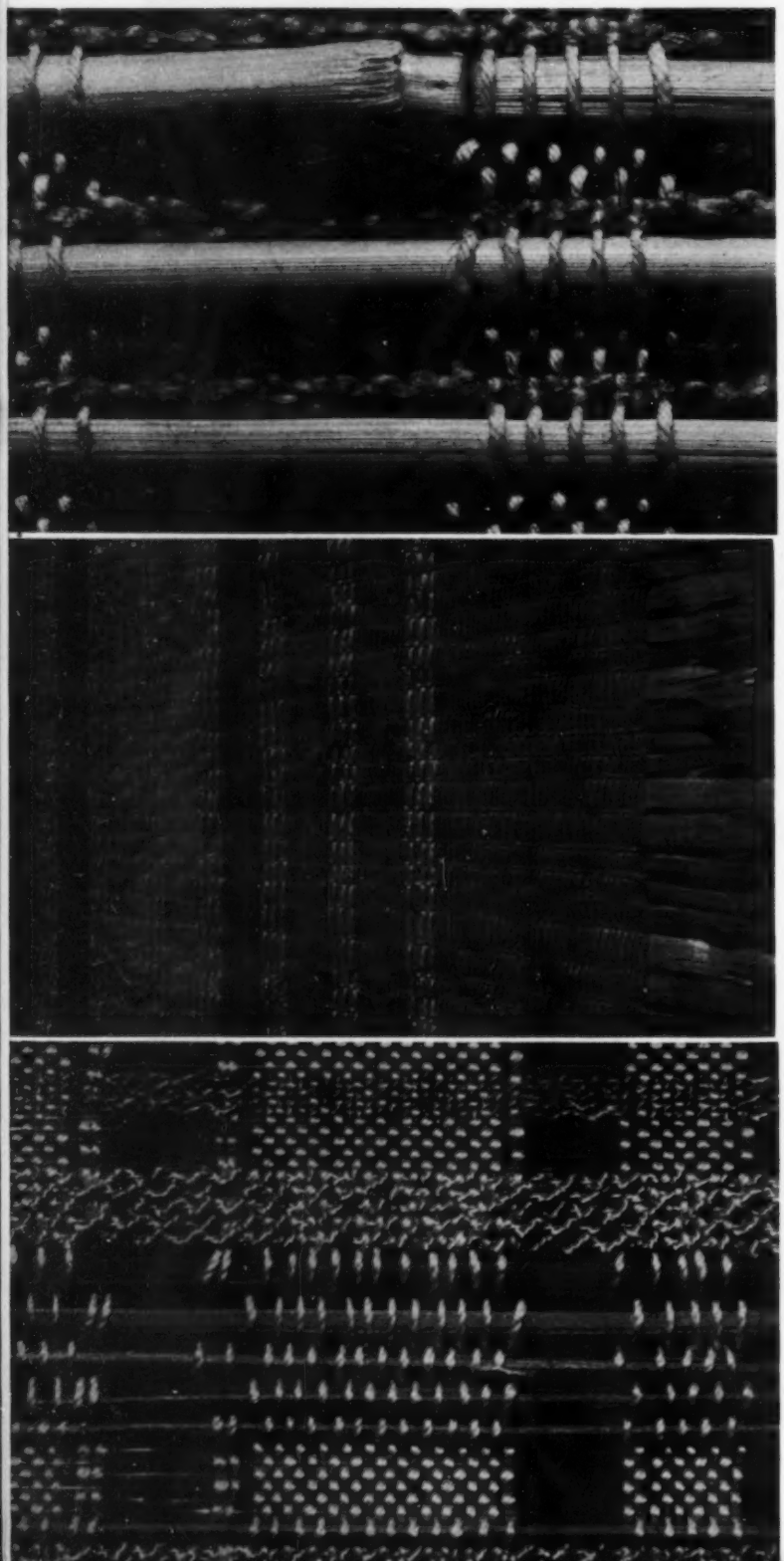
For efficient use of the warping frame there should be a spool rack. This was constructed like a box, four sides but without top or bottom. The original model was made from crate wood but it could be made of plywood just as well. Looking ahead to the time when a 4-harness loom might be wanted, this frame was made the same width as the castle. It fits down into the loom frame in place of the 2-harness castle and using the same bolts and holes is held securely to the top sides when a 4-harness castle is desired. When used as a spool rack it may be clamped to a table in a convenient position for the warping frame. The harnesses are removed and two wooden dowels (spool sticks) are inserted through holes in the sides of the rack. These sticks are held in place by a cotter pin at each end. Figure 2 shows the spool rack in place with the warping frame.

In Figure 4 the rack is serving as the castle for the 4-harness loom. Four heddle frames are suspended from the

(*Continued on page* 50)

WEAVING IN HAWAII

by HESTER A. ROBINSON



To a weaver coming to the Islands for the first time the variety of color and the beauty of Hawaii is more than an inspiration. Hearing that there has been considerable weaving done by the fast dwindling Hawaiian population, one eagerly seeks it out, only to find that the plaited lauhala matting which one sees in abundance is called woven. There have been one or two attempts at commercial hand weaving, none of which have taken advantage of the use of local materials with which the Islands are abundantly supplied.

Weaving on any sort of hand loom was never practiced by the native Hawaiians, although weaving on primitive looms has been and is done by other members of the Polynesian race on other Pacific Islands. The Tapa, a rather soft beaten bark fabric, answered the clothing needs of the people on Hawaii. The stripped and plaited leaves of the hala tree sufficed for floor covering and other utilitarian purposes. Hats were made from the pliable stems of ferns, and the young leaves of the cocoanut palm, while house walls and ceilings were made from the stronger leaves.

It was not until the American missionaries from New England came to the Hawaiian Islands, and had a few hand looms and spinning wheels shipped around the Horn, that weaving as we know it was done here. Those early weavers must have had a difficult time obtaining materials as neither cotton, linen, nor wool were native to Hawaii. All such materials had to be imported, and in those days shipping was not a matter of days or even weeks but months.

With the advent of various racial groups, brought in primarily to work on the sugar and pineapple plantations, the wealth of weaving background gradually developed. Now, one sees women with tattoos on the back of their hands, a sign that they have been weavers. To think that the finely woven pina cloth from the Philippines is hand woven is almost unbelievable. A person is awed by the fabulous tapestries and silks from China, Japan, and Korea. The beautiful striped fabrics and ikated materials of Bali and Java are also inspirations for new adventures in weaving.

Wishing to experiment with some of the fibers mentioned, the weaver finds to his sorrow that the pineapple grown here is not the same species as that from which the pina cloth of the Philippines is woven. The silks and cottons of the oriental fabrics are not native to these Islands, either. Too, the banana bark fibers woven in the

From the top down. Warp, yellow carpet warp, weft, napier grass, brown jute, green novelty yarn. Warp, 20/2 aqua and blue cotton, 8/2 yellow cotton, weft, Chinese matting and 20/2 aqua cotton. Warp, 20/2 white mercerized cotton, weft, palm midribs, green plastic, yellow-green novelty yarn, old gold novelty.

orient are not from the same species as the banana grown here. One also finds that the decortication of these fibers is a long and laborious process. Therefore, the weaver does the obvious thing. If interested in creative or experimental weaving he goes to work finding out what he can about preparing the native materials that do grow here.

Hala already prepared can be bought, though it is expensive and has to be cut to size. There are such things as ironwood branchlets, iris leaves, swamp grasses, umbrella plant stems, palm sheathes and leaves, as well as the aerial roots of the banyan tree, which can be had for the cutting. Most of these can be cut to size better when green, then bundled and dried. The midribs of the palm leaves, sugar cane stems, bamboo, fern stems, napier grass, and haole koa, to name just a few, can be stripped of leaves, cut to length and dried. If the materials have been carefully prepared they will keep and stand a great deal of wear and tear. The color range even in this small group is amazing, from dark brown to yellow and grey green.

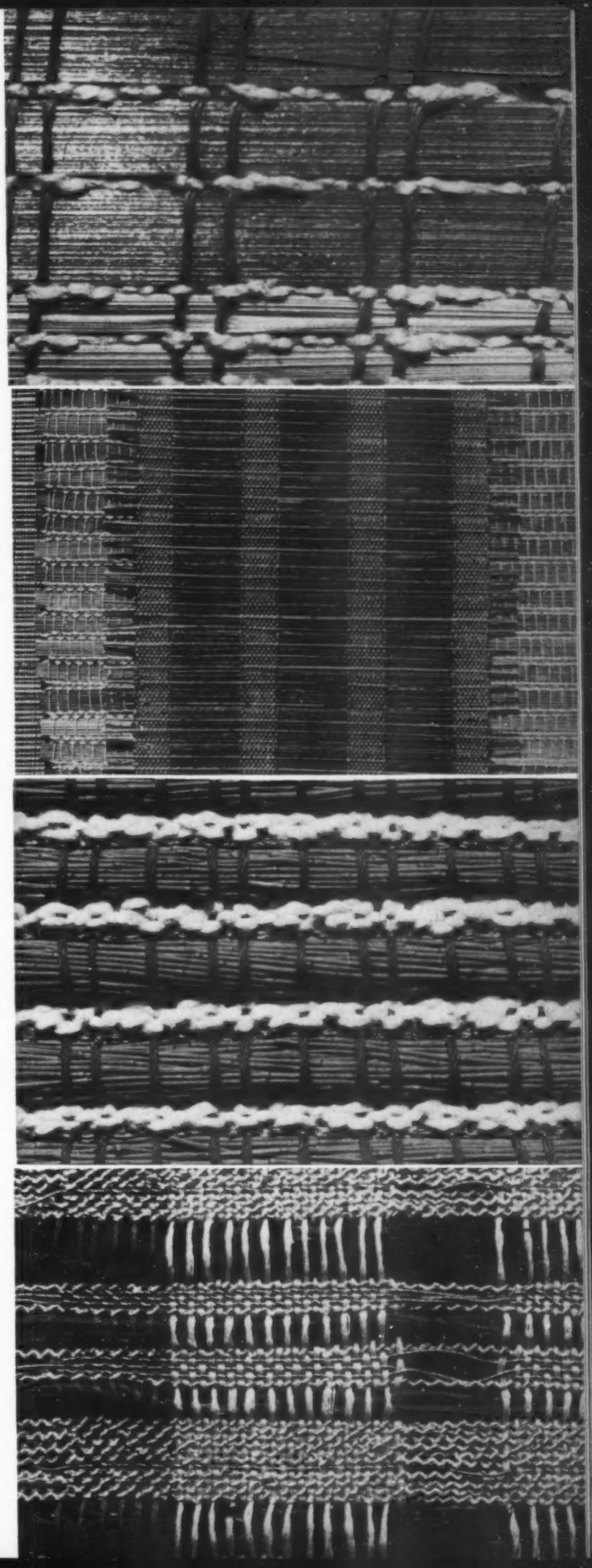
The beaten bark of the hau tree, fibers from the cocoanut husk, the sheath of the royal palm, the inside peel of bamboo, are some of the many materials that take to dying beautifully. The old Hawaiians used many dyes in the preparation of their tapa cloth, made from roots, barks, seeds, and nut hulls. Extensive research in the field of native dyes undoubtedly would yield a great many interesting results for the modern weaver.

The commercial dyes of today are probably more colorfast, especially if the dyes are boiled in.

If one has a certain amount of patience and considerable curiosity, it takes less time to prepare many of these materials for weaving than to wait on the uncertainties of shipping or pay the price of airmail to the Islands.

Any of these materials woven with imagination and color will make extremely decorative and durable fabrics. There are innumerable warp possibilities either, spaced or continuous, so that, either in plain tabby or pattern weaves, one can bring out the texture and color possibilities of these materials that can be had for the cutting. Experimenting with these native materials is stimulating as well as a challenge to design articles suitable to the gracious indoor-outdoor living one finds here in the Hawaiian Islands.

Miss Robinson is assistant professor of art at the University of Hawaii. Has a degree in sculpture from Ohio State and studied weaving with Florence House at Columbia. Has been teaching weaving three years in the Islands, and interest in the weaving classes has greatly increased.



From the top down. Six strand red cotton, weft, magenta dyed bamboo, gray-green novelty yarn, iris leaves. Three examples—bottom layer, warp, 20/2 maroon cotton warp, weft, field grass; middle layer, warp, blue carpet warp, weft, aqua dyed palm sheath, heavy white rayon cord, and fine novelty yarn; top layer, warp, green gold package cord, weft, palm midribs, gold cord, and gray-green linen rug yarn. Warp, six strand red cotton, weft, ironwood branchlets, white novelty yarn, gold cord. Warp, tan and brown embroidery floss, weft, banyan aerial roots, yellow and white novelty yarn, gold cord.

What Loom Shall I Buy?

by BILL CARTER

Each year we get many inquiries from weavers and students to this effect: 'I'm buying (or building) a loom. Please tell me which is the cheapest and the best type." The experienced weaver can readily see that any brief or concise answer is impossible; however, to the questioner this is a very serious matter. Most advanced weavers have formed quite positive opinions about looms and weaving equipment, and we realize that the quickest way to start an endless argument is to criticize another craftsman's tools. In this series of articles we are not trying to start any arguments, or to proselyte anyone who has developed his own techniques and opinions of equipment, but rather to guide the novice or subnovice who seeks information.

In this discussion we shall preclude immediately the so-called weaving frames and table looms of the slot-and-eye heddle arrangement. They may be looms according to Webster, and many people have found hours of pleasant pastime or therapeutic enjoyment in the operation of these devices; but they are hardly to be considered in the category of looms to the handweaver. At the other extreme are the truly remarkable and in some cases almost automatic weaving devices built by engineers, mechanics, or other gifted individuals; but these are difficult to operate and adjust unless their master is present, and the cost of reproduction on a commercial scale would be astronomical. Hence the bulk of our remarks will be directed to those who fall between these extremes, those who expect to weave for pleasure (or profit) on handlooms purchased on the open market or built by the average craftsman who copies from an existing model.

We shall discuss the various parts of the loom in the order of their functional importance, giving both advantages and disadvantages under the various conditions. The reader may then decide which are suitable to his circumstances. In fairness to those manufacturers whose equipment we have never seen or used, we shall avoid the mention of trade names. However, *Handweaver & Craftsman* can furnish you with a list of reputable manufacturers; or you may direct your inquiries to us in care of *Handweaver & Craftsman.*

The most important functional part of any loom is the harness motion, or the apparatus which creates the shed. There are three main types and many variations of each. The presentation of these three types is not necessarily in the order of their importance.

1. The *rising shed* is created by raising the desired heddle frames or harnesses (which normally rest at their lowest position), leaving those not in motion in their normal position. The raised threads thus form the upper shed, and those in the normal position form the lower shed. These frames are raised by several methods, but the most common is an arrangement of levers known as

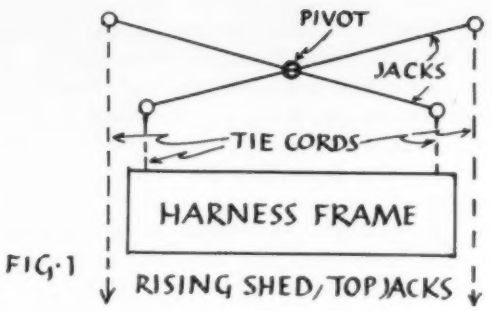


FIG. 1

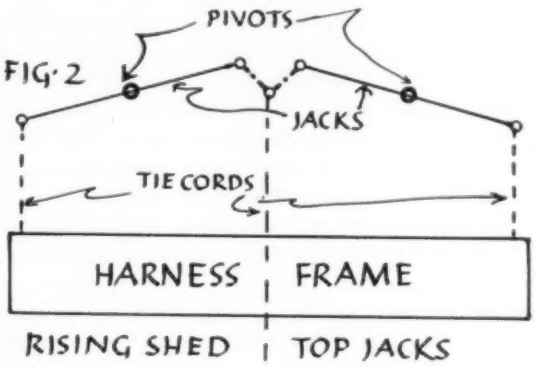


FIG. 2

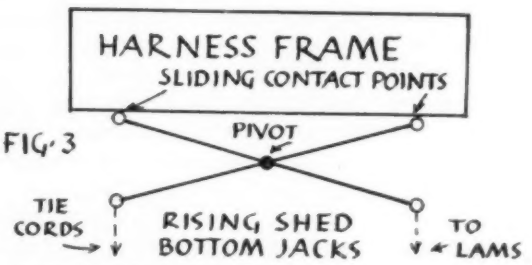


FIG. 3

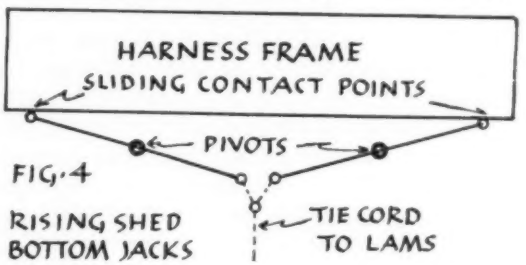


FIG. 4

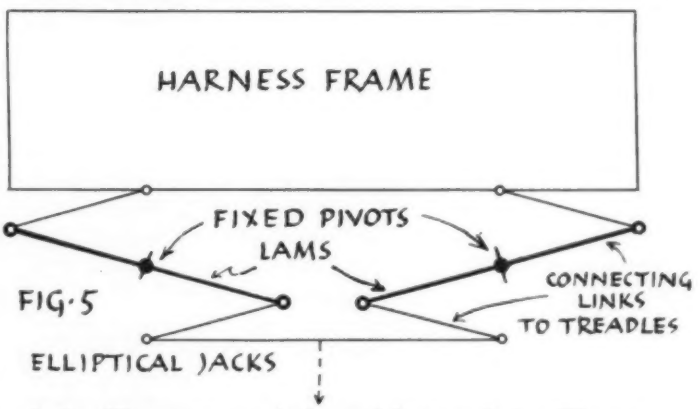
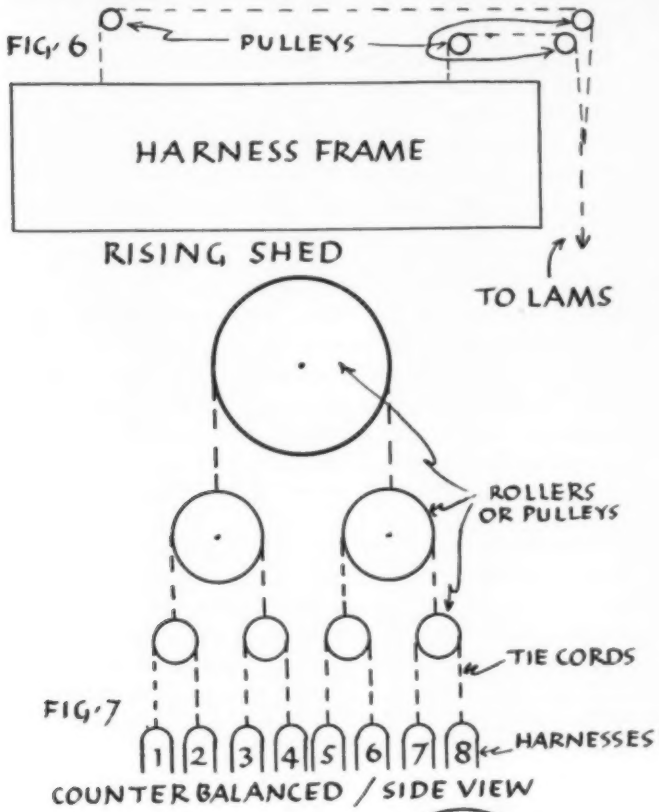
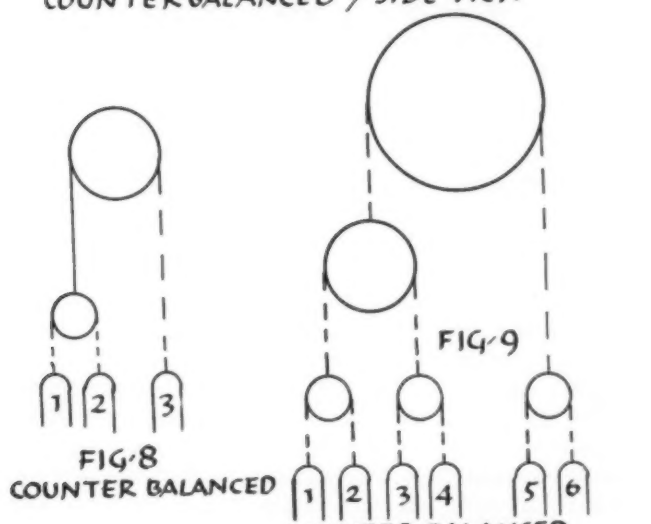


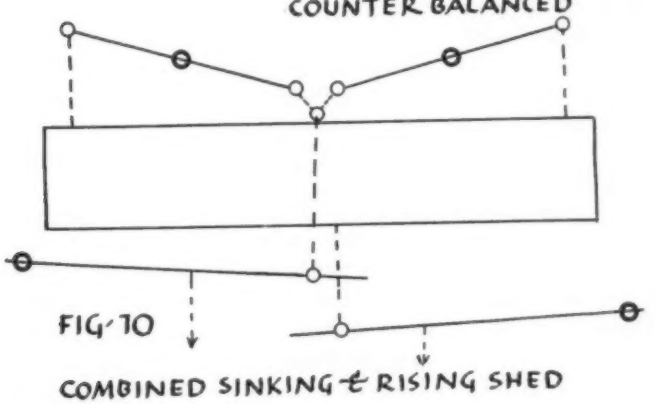
FIG. 5

jacks. There are top jacks and bottom jacks. There are two types of top jacks, one of which consists of two long levers for each harness which extend the full width of the loom with a common pivot point in the center of the top castle. The harness is suspended by a pair of cords from either end of the harness to the shorter end of the jacks. They are activated by cords from the longer end of each jack downward past the end of the harness to a

set of double lams, a floating lam, or a rolling lam. Figure 1 is a schematic diagram of this system. This and the other line drawings illustrating these harness motions are not working drawings and are not drawn to scale. Generally speaking, these long levers are not very common and not to be considered by the novice. Unless they are made of extremely well-cured hardwood and well varnished, they have a tendency to warp and twist; and unless the lam system (which will be discussed later) is perfect, it is impossible to get a suitable adjustment.







The more popular type of top jacks consists of two short levers above each harness. Each lever is slightly less than one-half the width of the loom. The pivot points are near the center of each lever (see Figure 2). Harnesses are suspended by tie cords from the outer end of each lever, and they are activated by a cord attached to the inner end of the levers and passing down through the warp to the lams. This system functions better because the levers are shorter and not seriously affected by warpage, and the fact that a common cord is used to activate both jacks means that adjustment for height does not affect the synchronization of the two levers. The main objection to this type of motion is that the activating cord sometimes chafes the warp threads if not carefully placed; however, with a little care this can be avoided.

One general advantage of top jacks is that the space taken up by these levers is on top of the loom and hence does not complicate the rather precious space between the warp line and the floor line and will permit the lowering of the warp line of the loom. This is not a serious problem except in some cases of physical handicap or in the case of a short-legged person, where being seated on a high bench (in order to reach a high breast beam) might be objectionable.

There are several types of bottom jacks. The main objection is, as stated above, that they make it impossible to lower the warp line. One type (Figure 3) consists of a pair of long levers with a common pivot point in the center of the loom. The outer ends are activated by tie cords connected with the lam system; the inner ends raise the harnesses by direct pressure on the bottom of the harness frame. Another type (Figure 4) has two short levers pivoted independently at the one-quarter point on either side of the loom. They are activated at the end nearest the center; each pair is joined at this point by a common cord. When this cord is pulled downward by the lam system, it raises the outer end of the lever which usually bears directly against the bottom of the harness and thus raises the harness by direct pressure. Generally speaking, bottom jacks are more easily used and adjusted by the average weaver than top jacks. The main objection to any jack-type loom is that in some climates the jacks (and harness frames) have a tendency to warp and chafe, and the jacks will operate the wrong harnesses. This can be overcome to some extent by an extremely heavy varnish coat, but most commercially produced looms do not employ this feature.

The writer has developed a type of lever system which is not too widely known but which has proved highly successful. We call it the elliptical jack; but, actually, it is a series of levers and lams connected at the pivot points by metal links which are permanently riveted in place. This precludes all sliding contacts, and no amount of warpage has upset the system: Figure 5 illustrates the principle involved. The encircled crosses indicate the stationary pivot points, while the open circles indicate

(*Continued on page* 54)

WHY do you want to WEAVE?

by BERTA FREY

So you want to weave? Why? There are many reasons why people learn to weave, but all of the reasons possibly can be grouped in two general classes as typified by two young men.

One very well-known and successful weaver, when I asked him why he started to weave, answered very definitely: "I fell in love with a loom." This covers so many reasons for weaving. It is more than merely liking the mechanical working of a more or less complicated piece of equipment. A successful weaver must love his, or her loom. It is a friend as well as a servant.

We all have within us an urge to create—a loom provides the means of creating all kinds of useful and beautiful objects. We all enjoy a sense of accomplishment—and I know of no weaver who does not get a thrill when a piece of fabric comes from the loom. Even if we do not especially admire the pieces we have made, it is a thrill to know that it is a task done and well done. We all enjoy the praise of our friends and of others. The admiration of, and thanks for, a woven gift is a tremendous boost to our vanity. We all are conscious of the economics of any venture—whether we need to earn money or not, we get a welcome lift to our ego when we sell our first woven yard.

If we love the feel of textures and colors, weaving is the perfect answer. And if we feel that it is an expensive hobby, we can always alibi that we save money by making our own clothes and gifts. And better still, we can so often make our hobby one that pays its own way.

The second young man had quite a different point of view. He had seen an exhibition of fabrics by Peggy Ives and was impressed by the prices. He said "Here is my post-war vocation." I don't know whether he learned to weave or not, but my advice to him was "don't." It looks so easy to make beautiful fabrics but there is more to weaving as a career than just showing the successful fruits of a loom. Before starting to weave one must have a background of good taste, a sense of color and proportion, and a sense of style.

"Style" is a very difficult thing to define. In Barrie's play "What Every Woman Knows," Maggie says to her brothers about charm, what could as well be said of a sense of style: "If you have it, you don't need anything else and if you don't have it, it makes no difference what else you have." Style means more than the mere fashion of the moment—it is the whole general effect of what a craftsman does.

As a "job" weaving is not fun. It involves more hard work than any one person can do well. It means studying fashion trends, and being at least a year ahead of the shops; it means making dozens of designs before finding a good one; it means producing yards and yards of fabric against a deadline; and above all it means marketing and bookkeeping. The only way to stand up under all this is to develop a small factory, and then much of the joy and glamour is gone.

But for those who, like my friend, have fallen in love with a loom and are starting on a career of weaving for joy and profit, I should like to suggest a course of action.

In the first place, go to a good teacher. A class is usually better than private instruction for it offers the stimulation of contact with other weavers and usually there is a wide variety of looms on which to practice. Learn the fundamentals of weaving: how to sit at a loom, how to develop a good rhythm, how to make a warp. Learn ALL the ways to put a warp on a loom, learn the advantages and disadvantages of each method. Learn to read and write drafts for all types of fabrics and learn to analyze fabrics. Become familiar with different types of looms. Develop self-confidence.

Secondly, buy a loom. A loom represents quite an investment and should be given careful attention. Will there be only one loom that must do for all types of weaving? Or will there be several looms? Is the loom to be for heavy duty or for light work? What width is best? Remember that a narrow fabric can be woven on a wide loom, but a wide fabric is impossible on a narrow loom. Four-harness or multi-harness? Consider the kind of harness action—there are three general types: counterbalanced, contra-marche, and independent action.

A counterbalanced loom is usually a 4-harness one. It is designed to use two harnesses at a time and on most looms, it is difficult, if not impossible, to get a shed of three harnesses against one. A contra-marche loom is a jack loom with an elaborate tie-up using two sets of lams. The independent action is usually a more simple tie-up that allows each harness to be used independently of any and all others and in any combination. A properly equipped classroom should have examples of each kind of loom and the instructor should be impartial in pointing out the characteristics of each.

There is the important matter of cost. That is a very personal problem. But remember this: the most costly loom is sometimes the most economical in the long run. It is also utterly silly to buy the most expensive loom if it does not do a better job for the intended use than the less expensive one.

Thirdly: Think of other equipment. The loom is just the first piece of equipment—it calls for accessories. Are you near a weaving center where you can go to make a warp? If not, then the next thing is a warping reel or frame. A frame is less expensive but as a rule the capacity is limited, and a reel will allow a longer warp. A spool rack is a help if not a must. A bobbin winder is a necessity and an electric one is a luxury that soon becomes a necessity. A skein holder, either a table swift or a floor swift, is another valuable piece of equipment. A collection of reeds and shuttles as well as a collection of yarns will call for boxes and cabinets and shelves.

Fourth on the list is to consider space. Weaving equipment requires lots of room. Is there a place for a loom where it and the weaver can be happy? Families rarely approve when the loom drives them out of the dining room or bedroom! And it is an awful bore to have to keep the weaving room all spic and span for company with never a thread on the floor or a spool within easy reach on a chair seat.

And lastly—consider *TIME*. Weaving is a virulent disease. It demands and consumes time. It makes the weaver forget that dinner time is near or that dinner is on the stove. Weaving has a terrible effect on the weaver—it makes a real weaver hate a vacuum cleaner and a dust cloth and dishes and pots and pans! You may think that you will be happy to spend only an hour a day at the loom, but

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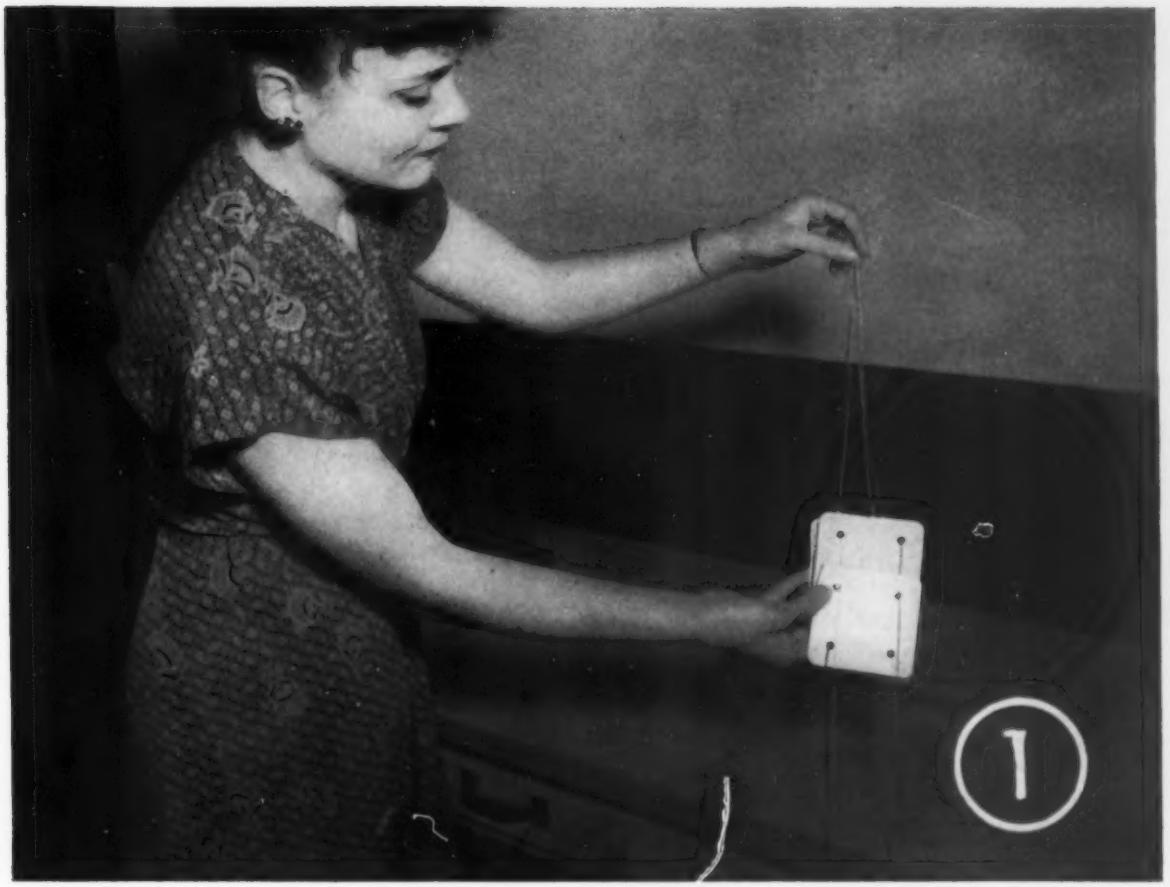


It's in the Cards

by HEATHER G. THORPE

Card weaving is a very old craft, indeed. Examples of it have been found in the tombs of ancient Egypt and old folk songs of Norway make mention of it from the Bronze Age. Today it is mainly a peasant craft and few people, aside from weavers, have ever heard of it; a regrettable fact inasmuch as it is so simple, so useful, and so inexpensive to do. Surely we are all looking for a hobby like this!

Today when fashion dictates the use of narrow bands for shoes, peasant blouses, handbags, belts, and for gimp, card weaving is especially appropriate, for the resulting fabric is not only heavy but very firm and strong. Color and pattern are formed by the twisting of long warps made of cotton, linen, or wool as the cards are twisted in the hands. The weft or crosswise thread does not show except where it turns around the edges.

The following description follows through the steps necessary to make a card-woven belt about 1½" wide in colored horizontal stripes:

I. Preparing the Cards

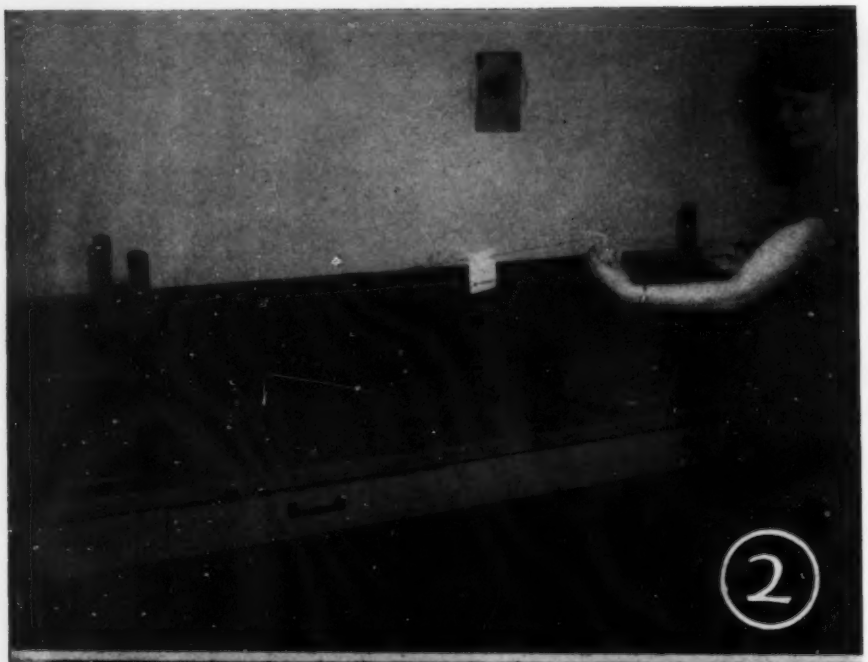
1. The cards themselves may be purchased ready-made for about one dollar a hundred from craft and hobby supply houses. Or a printer can make them for you of material known to the trade as "170 lb. index" cut 3½" by 3½" with corners rounded and nicely smoothed off. Have him punch a ⅜" hole in each corner, ½" in from the edge. Letter each corner clockwise A,B,C, and D.
2. Number the cards from one to fifteen and from one prime to fifteen prime. We will use 30 for a belt this width but the beginner would do well to use about ten for a narrower strip until the technique is mastered.
3. Stack the cards in order with all the "A" corners in the upper left and numbered so that number 1 is on top followed by 1', 2, 2', etc., and ending with number 15' on the bottom.

II. Threading the Cards

1. Take four tubes of carpet warp (perle cotton or heavy crochet cotton) of four different colors, for instance: yellow, red, natural, and black. Place each tube or ball in a tin can or other receptacle on the floor.
2. Holding the cards with the letters toward you, thread the yellow warp through all the "A" corners at once; the red through the "B" corners, the natural through the "C's" and the black through all the "D's". Knot the four warps together on the other side of the cards. (See Figure 1)

III. Warping

1. Placing two chairs one at each end of a table with the seats on the table, legs up and backs down. The distance they are apart will be the length of the warp. Two yards are usually enough for a belt with a buckle but it is better to be generous. Any other arrangment than chairs can be used, of course, and a weaver will use the warping bars.
2. Tie the end of the colored warps around the chair leg at the left.
3. Draw the pack of threaded cards



along toward the other chair and when at a point about half way drop the bottom card number 15′ from the pack. (Figure 2)

4. Carry the other cards around the chair leg on the right and back to the left. When half way back, drop the next card, number 15. (Figure 3)

5. Again carry the remaining cards around the first chair leg and half way back and, dropping 14′, repeat these steps until all the cards have been dropped. There is some twisting of the warps as they come from the cans on the floor but this can be straightened out without much trouble.

6. Now tie the four warp ends around the chair leg to fasten them off, after which they are cut.

7. You now have all the cards stretched out between the chairs. Numbers 1 through 15 are on the rear side of the legs and all those numbered 1′ through 15′ are on the front. They will be all jumbled up at this stage. (Figure 4)

IV. Re-arranging the Cards

1. It is not hard to arrange the cards so that the respective corners are all together again. The pack will now be numbered with 1′ on top, 15′ in the middle, followed by 15 and ending with 1 on the bottom. All the letters should be facing up and the strands of warp coming through the corner holes must not be caught on corners of other cards. (Figure 5)

2. Tie the cards in this order with a piece of string. Use a bow knot.

3. Remove the warps from the right hand chair leg and tie them all together in a hard knot. (Figure 6)

4. Remove the other ends of the warps and lay the cards and warp aside while you are

V. Getting Ready for the Big Moment

1. Have ready near at hand a chair, a ruler with a beveled edge or a tongue depressor for use as a beater, scissors, and something upon which to wind the weft with which to weave. This latter may be merely another tongue depressor, a tatting or netting shuttle or simply a small ball of the material. The weft used is the same as the warp and, as it does not show except at the edge, may be any one of the four colors used.

2. Tie a length of strong cord to the hard knot at the end of the warp and tie this in turn to some rigid support —a door knob, banister, or bed post.

3. Now, holding the untied ends in one hand pull on them very tightly. Be seated and draw the whole pack of cards toward you. Perhaps they will not budge! Is so, loosen and then re-tie the thread that is holding them together. Stroke and pull on the warps until the tension of each warp is equal. This part of the process is important for the better your tension, the easier it will be to weave. When the cards are about 12″ away from you and the warp is as evenly drawn as possible, tie it in a knot, having the red and yellow strands on the upper side of the warp.

4. Now tie yourself to this knot by looping a sturdy cord around it and tying it around your waist. Better make this a bow-knot, too, or you will find yourself permanently attached to your hobby!

5. Place yourself and your chair far enough away from the door knob so that by leaning back slightly the warps are made taut. In other words, you, yourself, form part of the loom.

6. Check to see that the cards are in their correct order with the letter "A" in the upper corner nearest to you, then untie them. Note: (The edges of the cards are toward you, not the flat surface.)

VI. Weaving

1. Grasping the cards firmly but not too tightly in both hands and keeping the tension of the warp tight, turn the entire pack away from you one-quarter turn. This brings letter "D" corners where "A" was before and warp colors yellow and black are on top. (Figure 7)

2. Insert the shuttle from right to left. The end can hang out about an inch or if you are a weaver you can fasten it in as usual.

3. Turn cards away from you again. "C" corners come up. Beat with the ruler, pressing the weft well into place.

4. Insert weft from left to right.

5. Turn cards away from you. "B" corners are up. Beat and then insert weft.

6. Turn cards away again. "A" corners are in their original position. Beat and insert weft. Do not leave any loops of weft at the edges. You have now completed four quarter turns of the cards away from you. There may still be some inequalities in the tension of the warp but these will soon weave themselves out.

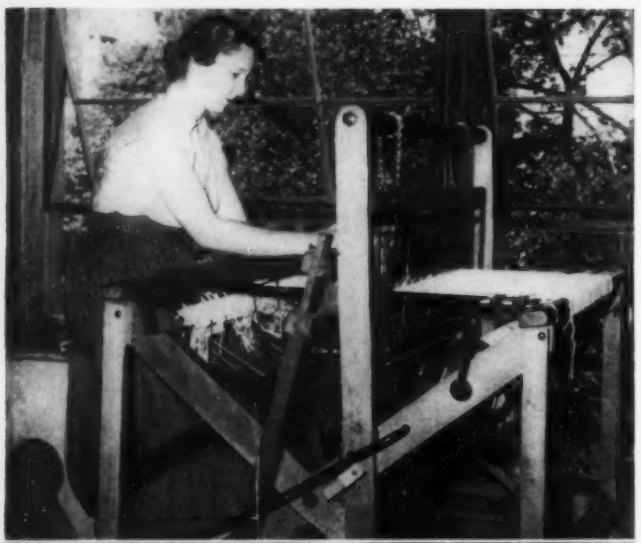
(*Continued on page* 55)

Weaving
in a College Art Department

by MARION D. PEASE

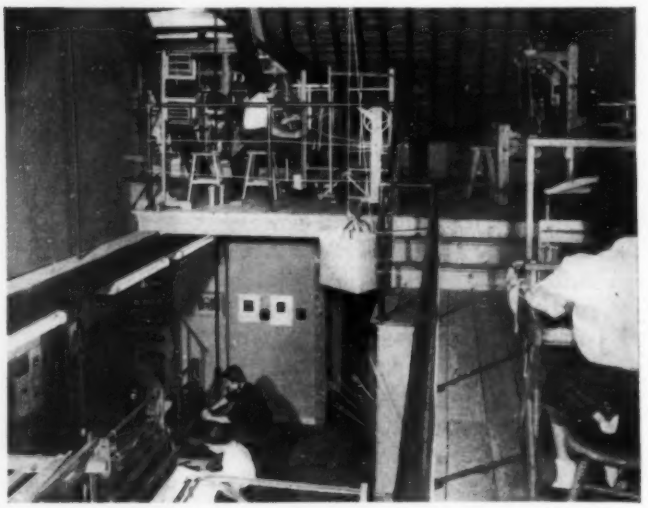
Weaving is a newcomer at Skidmore College, Saratoga Springs, New York. The course is an extension of the already rich program offered in the art department whereby a student can combine and relate courses in the field of fine and applied art with study in the liberal arts departments of the college and graduate with a bachelor of science degree. Weaving is not required of any student, but may be elected by anyone who has had a course in structural design.

Six years ago, in response to a growing interest among students in the textile field, a studio was equipped to serve as a "pilot plant" for screen printed fabrics. An adjacent area has recently been remodelled and equipped for classes in weaving. The building itself, a large, substantial brick structure, was once a fabulous coach house characteristic of the "gay nineties" in Saratoga Springs, but the sound of the treadling of looms now replaces the treading of horses' hoofs.



Senior weaving a flossa rug in the remodelled coach house. Below, skirts designed and woven by students.

General view, first floor and balcony weaving room.



The available floor space was long and narrow and hardly adequate for all the floor looms necessary. Immediately above, huge beams and struts terminated in a timbered roof some 30 feet from the floor, while dark and initially inaccessible attic space lay unused below the north slope of the roof. Under the circumstances it seemed logical to move upwards, especially as the rudiments of an existing balcony in the southeast corner suggested possibilities. The problem of connecting the attic and rudimentary balcony was solved by laying new floor over the tops of exposed beams and necessary supply cupboards along the east wall. Access was provided by space-saving circular stairs. And since transportation of supplies to the balcony was difficult by way of the circular stairs, a rope pulley and basket were installed. Pipe railings around the balcony, to keep the absent-minded weaver from falling into space, were made by the college plumber, and clothesline was carried from post to post below the railing. To insure good light and cross ventilation huge factory-type windows were inserted in the north wall above the balcony and from floor to ceiling on the south. Fluorescent lighting panels were anchored to beams or placed on brackets at suitable intervals so that all looms would be well lighted. The result is a weaving studio of somewhat unusual form, entirely functional, having been designed with the space at hand and at the lowest possible cost. Altogether ample room was provided for at least 20 looms.

The equipment is somewhat standard, with floor looms varying in width from 20 to 45 inches, generally equipped with four harnesses. Warping reel and warping board are located at the south section of the balcony so that students winding warps have some privacy and are removed from other weaving activities. Electric bobbin winders are conveniently located on both floors and all equipment is placed at easily available centers. Whenever

From the top down. Student work. Lampshade of poplar splints, from Nova Scotia Indian basket maker, made for student's home. Tapestry belt, silver buckle, both designed and made by art students.

possible the original timbered walls were left intact, but where construction was necessary the walls were covered with grey homosote board, which makes excellent bulletin space for reference material and display purposes. A flush door of plywood, supported by a filing case and shelf rack, both necessary items, makes an ample work table, beside which a white board is hung for the use of the instructor in writing out instructions and graphs.

Closets were designed to hold a great variety of weaving threads, selected by the instructor, stocked by the college shop, and available in the weaving room for study, selection, and purchase by students. Thread samples are now on file from many sources since weight, texture, and color in various possible combinations are considered important for study and investigation with respect to their use in design and construction. These include cotton, linen, wool, hemp, jute, nylon, bamboo, raffia, sisal, metallic, glass and plastic threads, and various natural fibers of local origin.

The objective of the course is necessarily limited becaues of the general college program and the relatively short time allowed. Weaving may be taken for one or two semesters and is introductory and pre-professional, although when correlated with other courses offered in general design and textile design, the student is equipped to advance rapidly in the textile field after graduation. The course is planned to give a broad base and general cultural approach to the subject with emphasis on both historic and contemporary weaving. While the majority of students electing the course are major students in the departments of art or home economics it is not unusual to find a student majoring in a liberal arts department in the course, since interest is the main prerequisite.

The plan for the first semester alternates a learning warp with a chosen project. The first learning warp (from 6 to 8 inches wide and approximately 2½ yards long) is designed by the student, using two tones or colors of carpet warp. This warp is then wound and threaded in plain weaving and a series of square samples is made on it, each in different technique or involving different structural problems. Each student then chooses and executes a project based on this experience. The second sample, or learning warp, is threaded on four harnesses in standard twill threading. A simple black or relatively dark warp thread is chosen, of sufficient weight so that not more than twelve threads to the inch are necessary. A similar thread of lighter value is selected so that the pattern will not be too fine and will be balanced, the dark warp thread being the raised thread, which makes for logical understanding of the first pattern drafts. Before any patterns are made on graph paper, each student experiments with free treadling, the loom being tied up regularly, first harness to first treadle, second harness to second treadle, etc. In this way the student senses the logical development of simple patterns. A chosen pattern designed through free treadling is then put on graph paper and with the understanding of written patterns now gained the student proceeds to

Reading down. Typical experiments in first semester work which form basis for later projects. Handwoven flossa rug, wool, by junior student. Additional experimental work.

write patterns, first executing them through free treadling, and then tying them up on the lams. As soon as satisfactory patterns are devised with the dark warp and light weft thread, the student experiments with weft threads in a variety of colors, weights, and textures, whereby aesthetic considerations follow the structural development of the weave. Projects then chosen by the students include scarfs and stoles, rugs, aprons, bags, lamp shades, runners, pillows, place mats, among others.

The second semester of weaving offers the opportunity for a broader experience and improvement in technique. Each student chooses several projects from a somewhat comprehensive list of suggestions, some of which involve considerable experimentation with materials and techniques until a satisfactory solution is found. Possible techniques may include piece dyeing of warp or finished fabric, screen-printed or tie-dyed warp, semi-circular weave, and special treadling or sleying. One project should involve a wide width of fabrics of sufficient yardage to provide a genuine weaving experience. The specific problem is initiated by the student and the type of fiber, or combination of fibers, is chosen for its structural and aesthetic quality. Books on weaving, illustrations, and fabrics, are studied, and industrial processes are discussed. Students are encouraged to visit mills in order to observe something of the relationship between handicraft and industry.

Weaving at Skidmore is in its initial stage of development. It takes its place as a part of the art curriculum for the student with a professional interest in the textile field. It also gives any student the opportunity to work in a creative field of applied design for personal pleasure and enrichment of experience. Weaving introduces the student to a new technique, a new way of expressing choices and ideas in terms of pattern, color, and texture. It acquaints each student with a craft that has a long and remarkable history. Certainly each weaver must inevitably gain a new interest in, and appreciation of, textile fibers and woven fabrics. For some gifted students it may be the stimulus for a professional career, while for many students it will become a source of great pleasure and satisfaction as they equip their own looms and weave for their own personal needs. It is my belief that a weaver is never bored or unhappy. Weaving is an exciting adventure which combines freedom with discipline to give great satisfaction. In working to produce a fabric, which, like life, is never quite perfect, there is always the urge to continue to try once more, always searching for the perfect design, the ultimate weave.

Fortunate indeed is the person in this industrial age who has the understanding and interest to engage in a creative form of art expression. Weaving is one form of such expression which is good, not only for the individual, but for society. It is only through recognition of fine quality that the consumer will demand, and the machines be controlled to produce, better designs. It is in large measure through the initiative of hand weavers that finer fabrics are finding their way onto the shelves of our stores and shops. There is a logical road from the hand loom to the machine; where the small sample first produced with love and infinite pains can later be translated into yardage for the benefit and enrichment of society.

Inspiration for New Designs in Wealth of Cotton Threads

by WALTER HAUSNER

The handloom weaver needs to know more about the processes of spinning cotton yarn in order to be sure of obtaining the proper kind for his work. The development of power spinning has resulted in the production of a great multiplicity of threads, offering wide opportunity for the creation of new designs in fabrics both for handloom and power loom production.

After ginning, the cotton arrives in bale form at the spinning mill. After the bales are opened fibers of different types usually are mixed and blended.

Vertical (Creighton) openers and horizontal openers-pickers open the mass of fibers into smaller and smaller flakes. In every progressive operation, the fibers are cleaned and loosened. On the picker the cotton is transformed into a continuous sheet and rolled into "laps." These are brought to the cards where systems of wire brushes operate to draw the fibers into parallel form, which leaves the card in a rope called a sliver. Several of these slivers are put together and drawn out to continue the process of parallelizing and evening out of fibers. In the case of very fine yarns (high count or number) the sliver is not only carded but also combed to eliminate the shorter fibers. Next the sliver is drawn out finer, given some very light twist and wound on bobbins. This is done on machines known as "intermediates," "roving frames," or "flyers."

The cotton, now called roving, is ready for fine spinning. Formerly this was done on a fine flyer or a mule, both slow and costly operations. In modern spinning the majority of cotton yarns is spun on the ring spinning machine. Very fine counts, however, are still spun on the mule. Yarn spun on the mule is more resilient and, if spun to the limit, more even than from any other machine. The fine spinning machine draws out the roving to the required fineness and gives it the required twist. This makes a cohesive, useful thread which can be wound on cops or bobbins.

The cotton industry today uses a great number of different machines and the steps the fiber has to go through during treatment vary somewhat, even from mill to mill. In principal, however, all of the above numerated steps are required in some form or other on various types of equipment. The type of cotton used and the count of yarn to be spun decide the type of machines to be used and the number of steps required. In general, the finer the yarn to be spun the more specialized the machinery and the higher the number of manufacturing steps.

The "count" or preferably "number," of cotton yarn denotes the number of hanks each measuring 840 yards that weigh one pound. All counts are based on the standard length of 840 yards, which is known as one *hank*. It must be remembered that one hank of cotton yarn is 840 yards, no matter what the diameter. One pound of yarn that contains only one hank, 840 yards, is known as 1s yarn, or number one yarn. If one pound

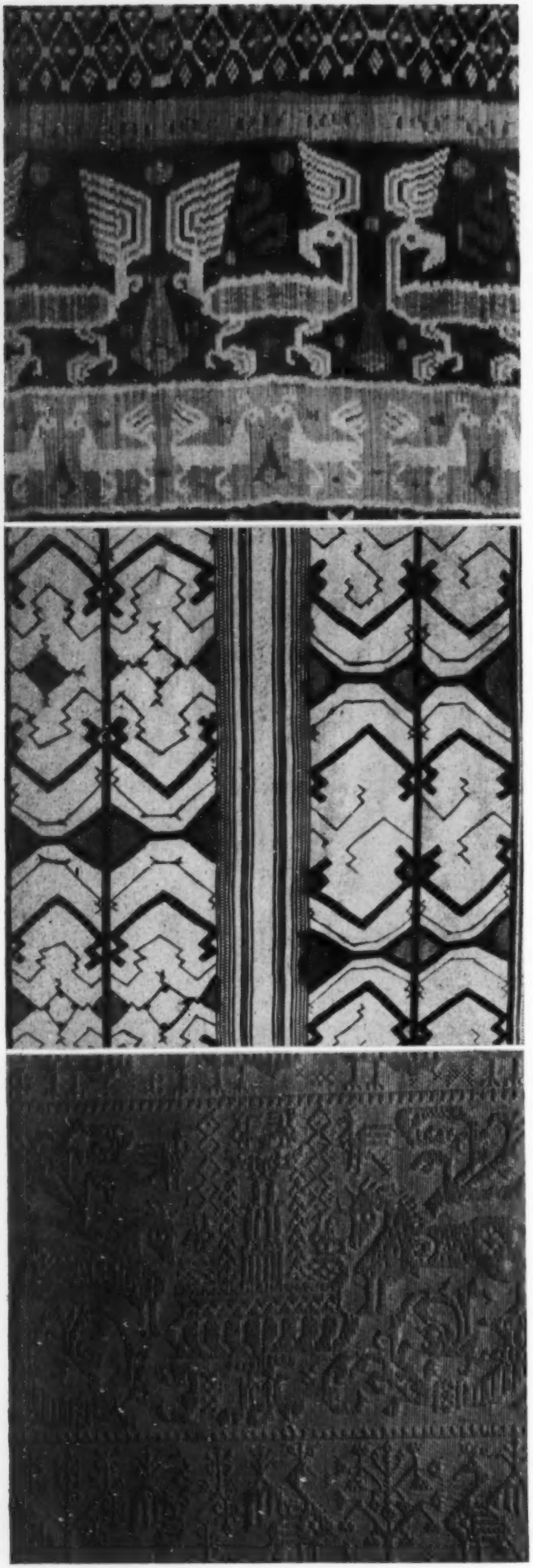
Spindles with hardwood shafts and pottery whorls, needles and knives of bone, used by the Indian tribes of the Montana today in Peru and Ecuador. Cotton supplies the fibers for their weaving. Shown in the exhibition "Men of the Montana" now at the American Museum of Natural History, New York.

of yarn contains two hanks, or 1680 yards, weighing only one pound it is known as 2s or number two yarn. The yarn number increases as the size of the yarn decreases, or the finer the yarn, the higher the count or number. Cottons run from number one, 840 yards to the pound, up to number 200. Practically all very fine counts are spun in England. If yarn is labeled 20/1, that indicates that one pound contains 20 hanks of a single yarn, each containing 840 yards, or a total of 16,800 yards to the pound.

In addition to single yarns, two or more strands are twisted together to form *plied* yarns. The count then denotes how many skeins of the single yarn weigh one pound, but to obtain the yards per pound of the twist, one divides the figure by the number of plys. Thus 20/2 is 16,800 yards divided by 2— or 8,400 yards per pound. If a plied yarn is plied again—20/2/2 for instance—the same rule applies. Divide 8,400 yards by 2 and you will have, 4,200 yards per pound.

Different varieties of cotton fibers have to be spun in different ways and different types of threads are produced. As already mentioned various types of fibers are usually blended into a thread. This blending is a critical operation because, if it is not done expertly the card will not only loosen and open the flakes of fibers into a loose sheet but it also will separate fibers according to length and fineness if the differences between the types used are too great.

As we speak of construction of fabrics we can speak



also of construction of threads. A thread can be constructed so as to be full and light or thin and compact, it can be smooth or rough in texture, very fine or very coarse, it can be single or plied, left or right twist. The different steps of the spinning process, the machines selected and their settings will decide this.

Super smooth threads, like, for example, sewing threads can, in addition, be singed and polished. Fine counts are combed and, in extreme cases, combed twice to give a smoother, more even, and more lustrous thread. Low and medium counts are often carded twice to increase luster, evenness and smoothness of yarn. On the other hand, cotton, especially in low counts, can be spun on a set which to the layman looks like a woolen spinning set. The resultant yarn is of a rough and round texture. I have repeatedly emphasized the evenness of the yarn. The repeated doubling and drawing during the spinning will increase this. Sometimes, however, threads are unevenly spun intentionally. Flake or flame yarns are made this way. The cards not only open up fiber flakes into individual fibers, they also reverse, under certain conditions, the process and make out of flakes tight little nubs and neps which cannot be opened up on any machine or process. This process, too, is being used for novelty yarns.

The great bulk of cotton is spun in natural color, but cotton can also be dyed in the raw flake, in sliver, or roving, and natural with dyed cotton can be combined at practically every step during the spinning process. This, too, will give a number of fancy threads.

The amount of twist given to the yarn in spinning not only influences its appearance as to smoothness and compactness but decides the yarn's strength. A yarn can have right or left twist or as it is better known in industry, "S" or "Z" twist. It can also be soft twist, only a few turns per inch (t.p.i.) for filling, or warp twist with just a few more t.p.i. It can be hard twist (also known as sharp twist or crepe twist) which is used for crepe effects for some twisting purposes and special effects. The less twist the thread receives the more open and full it will appear and the less strength it will have. Therefore, yarn is usually spun in two basic forms: weft, which is soft with few turns per inch; and warp, which has more twist and therefore, also more strength. As a rule single yarns are used in the majority of cases for filling only and plied yarns because of the added strength obtained through plying and twisting for warp and/or filling.

For plied yarns two or more threads are put on a twisting frame, which in appearance and method is very similar to the ring spinning machine. The main difference is that the ring spinning machine has a set of drawing rollers which draw the roving finer and the twisting frame has sets of delivery rollers which deliver the threads at steady tension and speed them toward the spindle and twisting ring. If all threads to be combined

From top down. Wall hanging, plain cloth weave, warp in ikat. Dutch East Indies, Island of Soemba. Modern, from Cooper Union Museum. Woven and painted cotton produced in traditional pattern by Indian women of Montana tribes today on backstrap looms. Shown at the American Museum of Natural History, New York. Bed valance, weft on twill ground. Undyed cotton. Italy, Sardinia, 19th century. Cooper Union.

are delivered at a steady and even rate we get the standardply yarn. On some types of twisting frames, however, the delivery sets are set up in such a manner that each of two or more threads to be twisted together is delivered at a different rate. This gives fancy twist or novelty yarns like nubs, slubs, twisted flakes, ratinés, loops, and others.

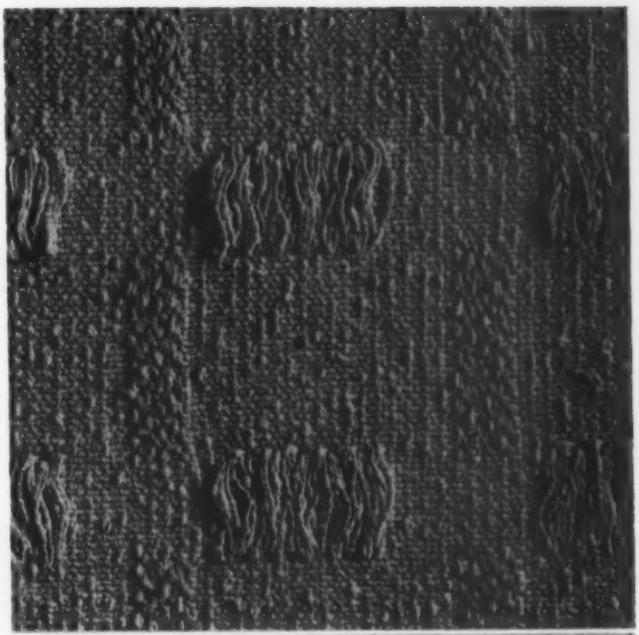
The yarns that handweavers usually buy from their dealers, if single, will have "Z" twist, if plied, "S" twist. In normal twisting, if the single yarn has "Z" twist the ply must be twisted "S" and the next ply again "Z" etc. Only for special effects and on special request will plied yarn be given the same direction twist as its components. If yarns of different counts are twisted together or if yarns to be twisted are fed at different rates, fancy twist yarns or effect yarns are obtained. The variety of these fancy and effect twists is endless. Some can be used in warp (alone or in combination with straight threads) as flake and spiral yarns, ratines and boucles. Others can only be used successfully in weft as for instance nub and slub yarns as these would cause difficulties while going through heddles and reeds and nubs on the powerloom would throw out the shuttles.

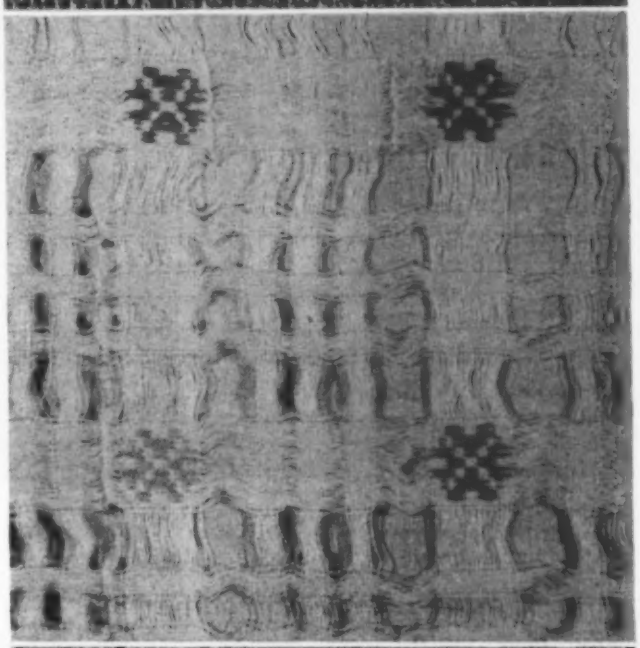
Spinners and twisters then put their yarns into skeins or on spools, cones, cheeses or tubes as required for the different fabric producing processes.

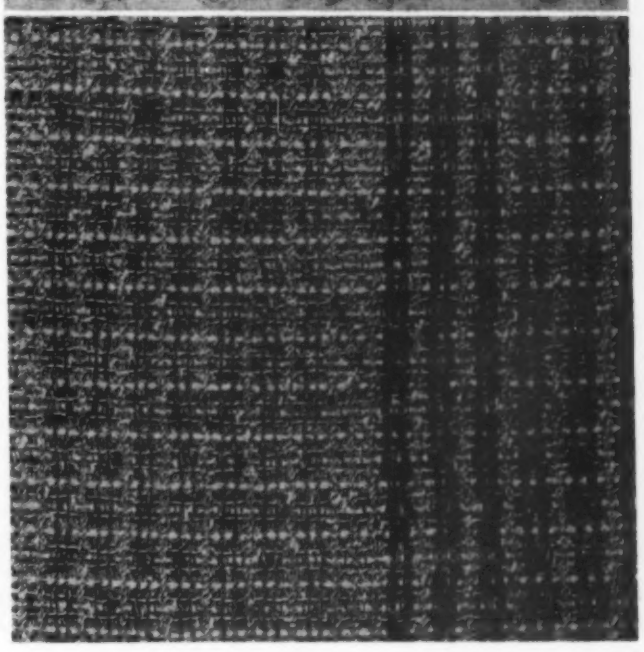
The weaver has, as we have seen, many different types of cotton yarns at his disposal. The varieties of yarn have been developed from the wide varieties of cottons, the way these cottons are blended, and how the blends are spun (count, smooth or rough) and how they are twisted in the single form (left or right, warp or weft) and finally how they are plied and twisted in the ply (direction of twist, number of turns, number of threads, delivery of individual threads to be twisted and other considerations). Even if we had only the most primitive of all looms available, we could, with this enormous variety of threads, produce infinite variations of fabrics. How many, then, are the possibilities afforded us to-day by our modern looms with their infinite design possibilities?

In most cotton mills only a very few fabrics are produced, usually in large quantities and therefore at a relatively low cost. This gives the impression that cotton is and can only be used for cheap mass-produced fabrics. This is not the case. Cotton despite the competition from wool in cool weather clothing, synthetics in warm weather clothing and decorative fabrics, silk in super light fabrics and luxury type textures, has gained in

(*Continued on page 47*)







From the top down. Cotton drapery, designed and woven by Rudolph Fuchs, North Texas State College, Denton. Balinese dancer's girdle, cloth weave, spaced warps and wefts, brocaded detail, undyed cotton ground, details dyed. About 1930. *Cooper Union Museum, New York. Prize-winning gray drapery fabric in original draft by Constance Tydeman combines cotton and rayon in warp and weft with heavier warp stripes of silk noil. Long overshots in weft grouped to make pattern of small rectangles in two tones of gray, the lighter with one thread of gray boucle to the shot and heavier with three threads to the shot. Dark stripes of deep green. San Francisco, California, Museum of Art.*

Planning an Exhibition of Handwoven Textiles

by KATHRYN WELLMAN, O. T. R.

Kathryn Wellman, O.T.R., Director of Occupational Therapy, Institute of the Pennsylvania Hospital.

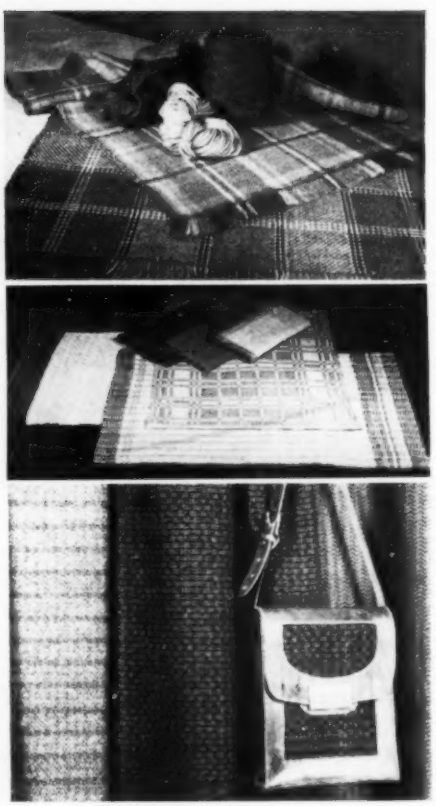
Installing exhibitions of handwoven fabrics and articles made from handwoven fabrics presents many problems which tax even an experienced museum staff, not to mention sponsors presenting such a show for the first time. An interesting exhibition is apt to include yardages, sometimes bolts of fabric, small objects such as shoes, handbags, belts and ties, table linen, rugs, and other pieces which should be shown in some way to simulate their use.

Handweaver & Craftsman has received many inquiries about packing and shipping exhibitions, as well as displaying fabrics effectively. There is a regrettable tendency, this magazine notes, to use textiles merely as background in a general crafts show when often the textiles excel other articles in quality. Miss Wellman, weaver and director of occupational therapy at the Institute of the Pennsylvania Hospital, Philadelphia, has had much experience with craft exhibitions and has been in charge of installing shows for the Pennsylvania Guild of Craftsmen, among others, and last year's exhibition of the Associated Handweavers at the Woodmere Gallery, Chestnut Hill. Miss Elva F. Hodges, Miss Wellman's assistant at the Institute, is a ceramist and an enthusiastic amateur photographer. Miss Wellman was invited by the Weavers' Guild of Pittsburgh, Pennsylvania, to exhibit at the Arts and Crafts Center there last spring. "The handsomely staged show was a revelation of the true craftsman's skill," according to Pittsburgh comment, "With a variety and intricacy of materials and great imagination used in color and texture." The exhibition also was carefully documented and explained, a practice which, in the opinion of this magazine, always increases the interest and understanding of the spectators.

The Weavers' Guild of Pittsburgh, Pennsylvania, requested an exhibit of weaving covering a variety of techniques, designs, and articles which might tend to stimulate creative weaving. As a teacher of weaving, continually experimenting, it was not difficult for me to assemble, from stock on hand, an adequate number of entries. Later, however, their committee on exhibits asked if, in lieu of a gallery talk, I would be willing to install the show, allowing said committee, quote, . . . "to observe while climbing ladders, handing out thumb tacks and helping wherever possible." This, for me, necessitated a complete revision of procedure.

Through the years of arranging craft exhibits at the Philadelphia Art Alliance, Elva Hodges and I have always worked at night, frequently all night, with no one else present. Therefore, to direct eight or ten assistants presented an altogether different approach.

Since I was quite a distance from Pittsburgh and could not visit the gallery in advance to plan the display, I asked the committee for a scale plan, showing the elevations of the room, position of available glass cases, and other details. This proved invaluable in drafting a layout in color, in order to determine the lengths of fabrics which would be desirable, and "what would go where."



Chaise longue throw in fine worsted, motor robe of homespun yarn. Colonial overshot patterns woven in color and texture appropriate for use in current setting. a. Rosepath; b. Honeycombs; c. Star of Bethlehem (twill); d. Missouri Trouble (4-harness Summer & Winter weave.) Three jacket lengths woven on same warp. Bag by Elva F. Hodges.

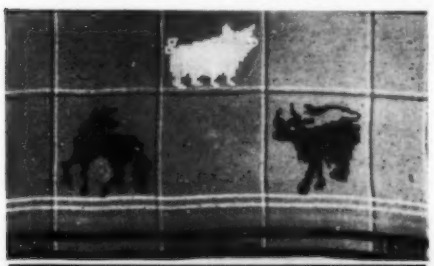
A rather obtrusive mantel and fireplace could be screened with bolts of fabric, stood upright along the mantel, allowing ends of material to hang to the floor. Lighted lamps could be placed on marble shelf topped radiators and serve both to brighten the dark corner of the gallery and spotlight a pinwheel spread of scarfs on the wall directly above.

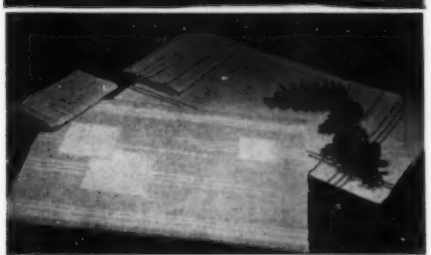
There were windows against which the open and close warp drapery fabrics could be hung. Aprons, blankets, and swatches could be distributed to fill the narrow wall areas.

Place mats could be displayed on shelves in the glass cases. The addition of ceramics, and large cones, spools, and skeins of yarns would break the flat appearance and lend height and color accent.

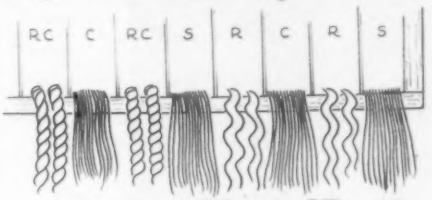
The overall plan of the show presented seven classifications: free design, contrasts in warp and weft, open and close warps, multiple beaming, double weave, experiments, and costume accessories.

Articles in free design included place mats with laid-in motifs, designed to be used with specific ceramics. There were also place mats using colonial overshot patterns adapted for use with present day furnishings through variation in color and texture and use of spot weaving technique and a group of napkins woven to use with Chinese grass mats.





Lamp shade—spaced warp of fine cotton and novelty rayon woven with same in all white. Dyed in the piece a rusty rose matching red clay sgraffito line design on dark blue lamp base. Lamp by Elva F. Hodges. Table runner of heavy rug yarn with laid-in design on twill threading.



DETAIL OF SLEYING FOR LAMP SHADE
NO 4 REED USED

S = 13 ENDS OF FINE SILK
RC = 2 " " RAYON CORD
C = 13 " " FINE COTTON
R = 2 " " COTTON RATINE

Three jacket lengths illustrated the economical and time saving use of one warp, with contrasting color employed in warp and weft. Variations in wefts, color, and treadling combined to produce altogether different results on multi-colored warps on which complementary colors created a brilliant effect. Wefts in multi-tones of the warp colors tend to gray and subdue the brightness while striped warps woven with wefts and treadlings which emphasize the stripe, either can form plaids or obliterate the stripes.

Baby blanket of tan worsted flecked in blue, green, red, yellow and white—stripes and animals in matching color. Tray cover and napkin—line design laid-in on twill threading. Place mat and napkin—design of lines and squares laid-in on plain weave. Linen mat and napkin with laid-in design matching. Ceramic set by Elva F. Hodges.

In the lounge and motor robes, sharp plaid contrasts were blended by means of carrying in the weft one strand of the color of the preceding stripe. Blankets are much softer if woven with three or four strands of fine worsted than with one strand of a coarser yarn.

No doubt this interest in disguising warps, arises from the fact that in our Occupational Therapy Shops, the 40 or more looms are usually dressed with 30 yard warps. To avoid too marked similarity in the patients' woven product, constant experimentation with wefts, treadlings, and tie-ups is necessary.

Open and close warp and weft was illustrated by a length of coarse, loosely woven 32" material originally woven for a cape. When the warp was resleyed to 16" width, it was used for a lampshade fabric. The elasticity of the weave made it possible to stretch the selvage around the lower circumference of the wire frame and to ease it to cover the top ring without gathers, tucks, or pleats.

A length of upholstery fabric illustrated multiple beaming, with twelve sample swatches developed in different textures, which varied according to the tension applied to the several beams.

Double weave included a number of samples from a teaching file. A friend had recently woven draperies for her entire house, using double weave. One side of the material is plain off-white, while the reverse side carries color combinations determined by the scheme employed in each room. This eliminates all possible puckering or sagging of linings when curtains are laundered.

Among experiments were a wall panel woven on a block printed warp; split rattan panels; and handspun suiting dyed with wild mignonette.

Costume accessories displayed a variety of scarfs in silk, wool and novelty cotton and a shoulder strap bag of leather and fabric matching one of the jacket lengths.

The baby blanket, not completed in time for the exhibit, would have been shown under free design. The tan worsted warp is flecked with blue, red, green, yellow and white; dividing stripes are made up of single strands of matching colors; animals are laid-in . . horse and cocker,

(*Continued on page* 55)

Laying-in the raffia for panel, one strand at a time. Mr. Painter uses his hands instead of a shuttle.

Hal Painter Explores the Possibilities of Raffia

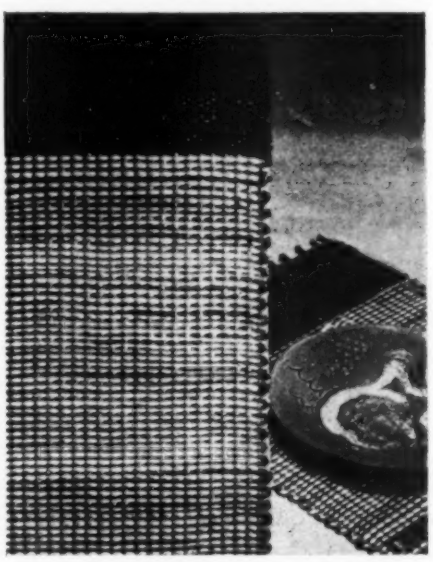
California Weaver Achieves Unusual Decorative Effects

Raffia is a practical and adaptable weaving material, according to Hal Painter, San Francisco handweaver, who has established a reputation for his work with the fiber during the past few years. He has woven a variety of fabrics for home use and has found that in addition to its practical advantages it is esthetically satisfying because of the pleasing colors it takes when dyed and its varying character—harsh and brittle in its natural state and soft, pliable, and silky when treated with fire-proofing chemicals. Mr. Painter's interest in the possibilities of raffia developed early in his career when he purchased his first loom and sent for yarn samples, preparatory to earning his living at weaving. He had just returned from what had been intended as a 2-weeks' sojourn in Mexico, studying painting and ceramics at Escuela de Belles Artes in San Miguel de Allende. Weaving, under Brita Sundholm, was a course he added as an extra, but immediately it absorbed his interest so completely that he dropped his other courses and devoted full time to it, extending his stay to six months. With this new interest, he abandoned his former plans to make a career of painting and ceramics, which had developed during his years of art study at secondary school, San Mateo Junior College, California College of Arts and Crafts, and Biarritz University during his service in World War II.

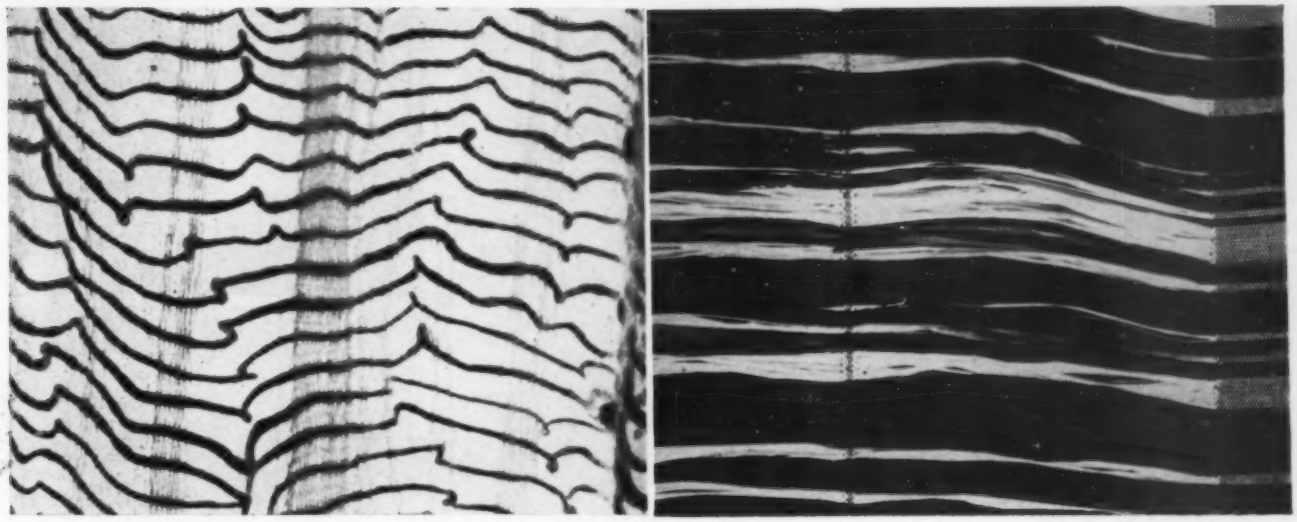
Included among yarn samples he had sent for, were samples of raffia. The fact that the fire-proofing process resulted in a material that is flexible and non-absorbent and readily cleaned by wiping off with a cloth, in addition to its soft colors, made him feel that it would be suitable for place mats to be used with modern pottery. Some colors, he found, also go well with traditional china. His first experiments were directed toward developing a line of place mats he could wholesale.

Because weaving with raffia is rather a slow process, owing to the fact that he doesn't use a shuttle, but weaves with his hands, taking one strand at a time, and over-lapping the ends to hold them securely in the warp, he found it necessary to make short-cuts where he could. He selected a grayed-brown cotton rug warp, because it harmonizes with the raffia colors, and developed 18 different designs in various stripe arrangements to weave on this warp. He sets the warp at five threads to the inch and weaves with a firm beat to make a place mat that lies flat on the table.

He eliminates time spent in finishing by tying the fringe on the loom. This he does by grasping four warp threads in the left hand and making two half-hitches around them with the raffia, held in his right hand. As he moves his left hand to grasp the next group of warp threads, he uses two fingers of that hand to spread the two groups of warp threads, so that in tying the second pair of knots, there will be no pull, causing the edges to draw in. The remainder of the raffia, after the knots are tied across the mat, forms the beginning



Place mats with brown border, alternating weft shots of brown and natural, one of 18 designs produced on one warp.



Left: The interesting pattern in lines is achieved by a light beat on the jute weft in this casement cloth of fine white cotton and tan jute for which Painter received second prize at the San Francisco Art Festival.

Right: Raffia curtain of black and white on fine cotton warp, sleyed in tabby and set with 2-inch edge and quarter-inch stripes at 10-inch intervals.

of the weft. The process is reversed in finishing off a mat. He allows only enough warp between mats to make a short fringe that will lie flat.

After he had placed his mats on the market, Mr. Painter began to expand his endeavors, experimenting with raffia for screens, sliding panels or room dividers, and curtains. He discovered that raffia has a dual character—opaque in ordinary daylight but transluscent when used at a western window with the afternoon sunshine streaming through, with colors so brilliant they give the effect of stained-glass windows, thus adding a new element to interior decoration.

In weaving screen, dividers, and curtains, Mr. Painter handles raffia in a different manner. He uses a fine cotton warp set about 15 to the inch in two inch bands at the outer edges and quarter-inch bands at about ten-inch intervals, holding the raffia firmly in place, while allowing its qualities to be fully exposed. The result is light and airy, with maximum flexibility. Where more width is required than his loom allows, he weaves the curtains in double weave with one edge open that forms the center of the curtain. Woven thus, they can be hung either vertically or horizontally and are pliable enough to be used with traverse rods. When a more rigid curtain or screen is desired, he inserts narrow bamboo strips in the weft at intervals of about one foot.

Colors closest to sunlight, he has found, do not fade much when exposed to the sun. Even a brown raffia curtain used for two years, faded very little. Red, as in many fibers, fades most readily. He has also learned that, although fire-proofed raffia will not absorb grease, it will absorb moisture in humid climates. Raffia is a fiber that likes the sunshine and heat and, if it has absorbed moisture, it will dry in fifteen minutes if hung in the sun. He recommends using an absorbent warp when weaving raffia.

Raffia, Mr. Painter said, comes from the leaves of the palm trees that grow in a 20-mile belt around the island of Madagascar in the Indian Ocean, off the east coast of Africa. On the leeward side of the island, where the trees are protected from strong winds, the fibers are of the highest quality, whereas those growing on the windward side are shorter and of less desirable quality.

Mr. Painter has also made tablecloths of raffia. One that is particularly effective has asymetrical warp stripes of cotton and weft of all raffia, combining a natural color with border bands of harmonious color stripes. He has made lampshades, weaving the raffia with a firm beat, as he does for place mats and tablecloths. He has also used raffia in upholstery, since it is a strong fiber, but combines it with other yarns of greater thickness so as to give a smoother surface to the fabric.

Weavers are not just weavers, Mr. Painter maintains, but must also be colorists, designers, researchers, technicians and even students of current events so as to be aware of available materials and to know trends for two or three years in advance. He himself continues to experiment with materials. Among these experiments has been his work with native materials such as swamp grass, sedge grass, horsetail grass, cattails and Spanish moss. He has found that horsetail grass, when the short clusters of branches are cut away and the main stem dried, makes a very lovely material for screens. Its hollow stems cause it to flatten when firmly beaten and the resulting irregularities allow light to come through in an interesting manner. Cattail leaves must be gathered just when they are beginning to turn brown at the tips, which is about July in the San Francisco Bay area and nearer autumn in cooler climates. They take a long time to dry and will shrink considerably during the drying process, so that they are about a third as large when they are dry. The Spanish moss he has combined in place mats with raffia for an interesting textural effect, using irregular shots of the moss, firmly beaten. It holds up well in use, retaining its gray-green color and its net-like structure.

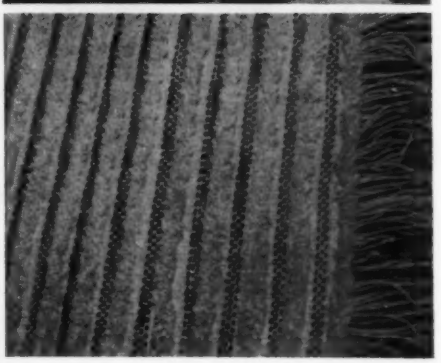
More recently, Mr. Painter has been making sheer casements in various materials such as cotton, jute, and rayon. A tan casement material with very fine cotton warp, irregularly sleyed, and a weft of natural jute, which he entered at the 1951 Art Festival in San Francisco, was awarded a second prize. Two of his designs were selected recently for "Good Design" at the Chicago Merchandise Mart.

Rugs and Carpets

Their Importance in Interior Design

Today's rugs and carpets, whether hand or machine woven, descend directly from the knotted and piled fabrics first made by nomad shepherds in Asia Minor perhaps in the early thirteenth century and from the flat, smooth-faced weaves known in Egypt and other early civilizations as early as 1300 B.C. Modern weavers use the same basic techniques, the same type of loom, and, for woolen rugs, yarn spun from the fleece of desert and mountain sheep raised under the same primitive conditions. Rugs from desert tribes today compete successfully in design and quality with the products of contemporary handweavers here and abroad.

Desert tribesmen wove their rugs to cover tent floors and walls, probably adding the knots and extra pile warps to add warmth to the fabric, and sold the surplus in the local market. When European explorers and pioneers of the great East-West trade routes saw these soft, and to them luxurious textures, they bought out the dealers, as did Crusaders in the Near East, who, when they returned, used them to cover the cold stone floors and somber walls of their castles.

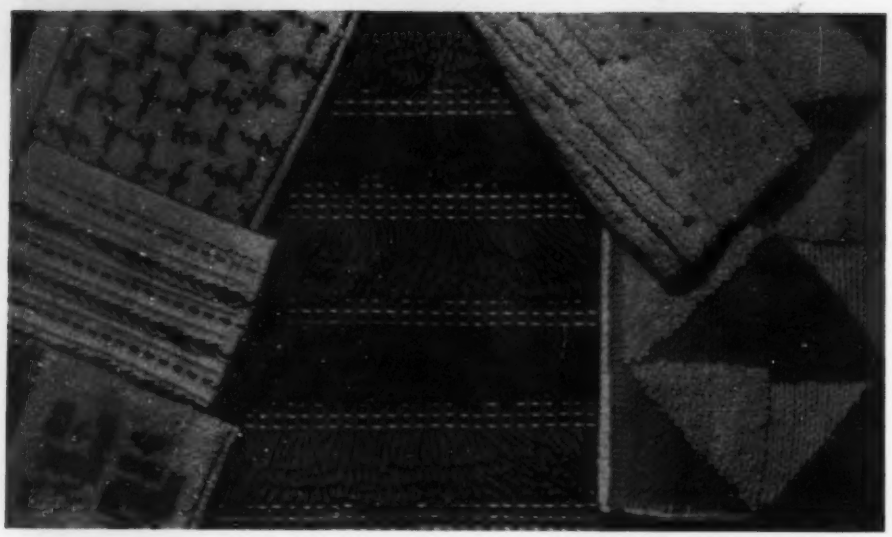


Top, tapestry weave, in background, is natural color, with heavy borders of knotted pile in silver gray. Three-ply yarn for background and pile. Bottom, background and pile in sand color, charcoal weft on flat weave. Heavy fringe woven in warp. All wool 3-ply yarn.

After Europeans had their first sight of the rich rugs from the East, the demand was enormous, beginning in the fifteenth century and lasting to this day. The Moors introduced rug weaving into Spain and Spanish influence helped to develop the great rug weaving centers in France. The Turkish invasions of Europe brought in more rugs, some as spoils of war. Captured Persians and other Near Eastern weavers were set to work, notably in Poland, where especially handsome silk rugs later were produced. The Poles wove their traditional kilims in flat weave, but the mixture of Polish and Oriental designs and techniques produced some types of rugs which are difficult to classify. From the time the first "Turkey carpets" were brought into England by the first traders, every family who could possibly afford them bought them and they were handed down as prized heirlooms. Chinese designs also had a great fascination for the English and English

Margo de Montané at work on her modern version of the primitive upright loom. On the loom, "Triangle Song," 10′ x 14′. Combination of soumak tapestry weave with knotted pile on geometric design of alternate triangles. Warm charcoal color.

Opposite, North African weaver at work on a knotted rug.



Samples of weaves in Mrs. de Montané's rugs. Soumak, tapestry, pile, kilim, and flossa knots in many combinations give interesting textural effects for modern interiors.

decorative artists of the 18th century especially adapted them in many ways for decoration of furniture, walls, and textiles to combine with original importations. With religious persecutions in France, French weavers were invited to England and certain weaving centers established where power loom weaving later developed.

Oriental rugs were taken to Sweden in the fifteenth and sixteenth centuries, some of which were kept in obscure churches and museums until fairly recent times when they have been put in important museums. These early imports undoubtedly had a strong influence upon Swedish techniques which has not yet been clearly acknowledged.

The great foreign demand for Oriental rugs and carpets led to practises in export production which began early and have continued to the present day. In the sixteenth and seventeenth centuries it was noted in Sweden that rugs made in certain sections of Asia "for export only" were often of lower quality than those for the home customers.

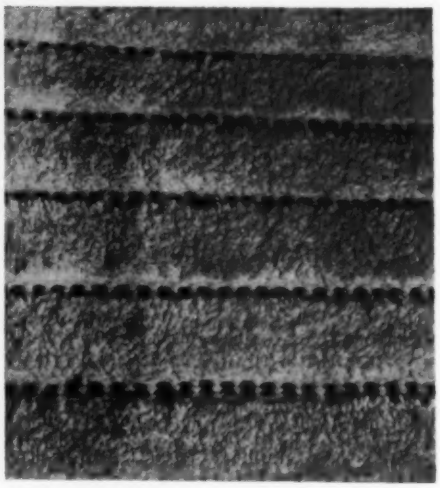
Rugs also were carried along trade routes and in merchant ships from the Near to the Far East. Persian and other Western Asian rugs formed the basis of design for many rugs produced in India and China. Chinese knotting was in most instances coarser than Persian but very beautiful effects were produced. The Chinese also cut designs in the pile.

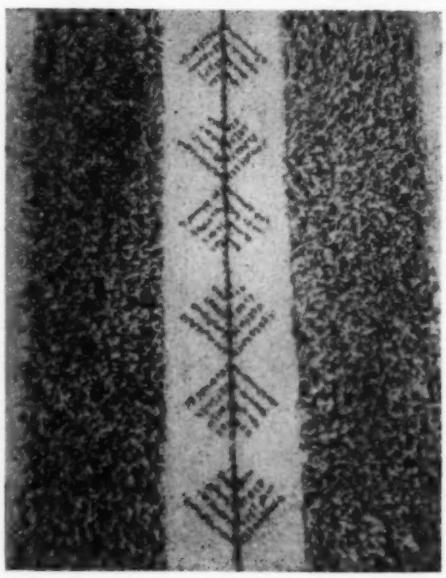
Both for luxurious and modest homes, the demand for handwoven floor coverings continued even after the introduction of power machinery for spinning and weaving which led to the almost complete abandonment of handlooms for production of household and apparel fabrics in England, the United States and some sections of Europe. The luxury demand was largely met with Oriental imports and fine Aubussons and other carpets from France. For modest homes, carpets were made from rag strips cut from the discarded family clothing and other fabrics, either woven at home or by the traveling weavers who set up their looms from house to house, staying until all the home-prepared material was woven. Small handloom plants sprang up, some of which turned to power production after a power loom for carpets was invented, some of which are still in existence.

Power loom production of rugs and carpets is a development of hardly more than 150 years in the United States and it still is closely related to its handcraft origins, the manufacturers do not hesitate to say. Many of the processes of spinning, weaving, dyeing and finishing require the work of individual craftsmen at some point. The manufacture of chenille carpets, for example, is classified as a "semi-handcraft" operation.

The basic consideration in carpet weaving, hand or machine, is the production of a substantial fabric especially adapted to resist hard wear. The surface is constantly subject to unusual stresses and strains. Modern carpets must stand harder wear because their owners wear their shoes in the house, a practice not followed in Oriental countries. Desert tribesmen never wear their sandals inside their tents.

Top. Detail, large livingroom rug, stripes alternating with bands of high pile, ghiordes knot and flat weave where design is achieved by two weft shots of black wool. All 4-ply worsted yarn. Bottom. Small rug, "Wheat," woven in natural and brilliant gold, flossa alternating with natural stripes of knotted pile.





According to technique, carpets are divided into two great classes; first and most important, pile weaves; smooth-faced, weaves, with the surface threads lying parallel to the plane of the fabric compose the second.

A pile fabric consists of a foundation formed by warp and weft, complete in itself, in which extra threads are inserted, usually with cut ends,

which stand more or less perpendicular to the plane of the foundation. The function of these extra threads is to take the wear. So long as any of the pile remains, mechanical wear has little effect on the foundation fabric.

Pile may be formed in two ways, either by inserting knots or by using extra warp threads which are looped into the material over wires that lift the loops to the desired height. The loops may be cut or uncut.

To form knots, short pieces of thread are tied to the foundation fabric in such a manner that the free ends, packed closely together stand more or less upright and form the pile. It is preferable to tie knots gradually, a row at a time across the warp, while the foundation itself is being woven. Knotting is more easily performed by hand than machine and gives the best possible results. It is employed in a large majoriy of Oriental carpets and is a favorite method of contemporary handweavers. Knots are of three distinct types; Ghiordes or Turkish; Sehna or Persian, which are both tied on two warp threads, and the Spanish or single warp knot. The Swedish rya and flossa knots are thought to be derived from the Ghiordes knot. Diagrams and detailed description of these knots will be found later on in this article.

Either vertical or horizontal looms may be used for rug knotting. Among contemporary weavers, Margo de Montané prefers the upright loom, duplicating primitive looms; while Edna Vogel works on a 9-foot horizontal loom. Beatrice and Viola Anderson, who have developed Swedish techniques, work on horizontal looms, as do Ingeborg and Elsa Kristina Longbers. Rug looms of either style may be large enough for several workers to weave at one time.

Pile also may be formed from extra warp threads, several times longer than the foundation warp which, in the weaving process, are lifted over wires to form loops of desired heights. The process is similar to velvet weaving which was described in detail by Lili Blumenau in an article on weaves in figured silks in the Spring, 1951, Handweaver and Craftsman. (Diagrams). If the pile is to be cut, a razor blade or other cutting device is attached to the wire, which cuts the loops as it is drawn out, or a knife is drawn across the loops above the wire, which is sometimes grooved.

For chenille rugs, the pile or chenille "fur" is woven in a separate weft blanket which is cut in strips and used as weft in the rug itself. The process has been described in an article by Walter Hausner in the Spring, 1952, issue of Handweaver & Craftsman, and by Dorothy Bryan in the Summer, 1951, issue. Chenille is a weave of unlimited possibilities, whether done by hand or machine, which can be woven in any shape, pattern, or color. Many modern embossed rugs are woven in this manner. Designs can be carved in chenille also.

Margo de Montané's rugs are excellent examples of the contemporary artist-craftsman's work in the adaptation of weave, knot, and pile techniques to modern floor coverings. A native of Argentina, she came to New York about three years ago where her work attracted immediate attention. She learned her craft from a Persian weaver in Petropolis, Brazil, who taught her by traditional methods and threatened her with dire curses if she ever departed therefrom.

Her first piece of work was a finely woven kilim, two feet square, which required six months to complete. From this experience she realized that the most acute problem of the modern weaver was time and immediately began to experiment with larger bolder designs. She was still,

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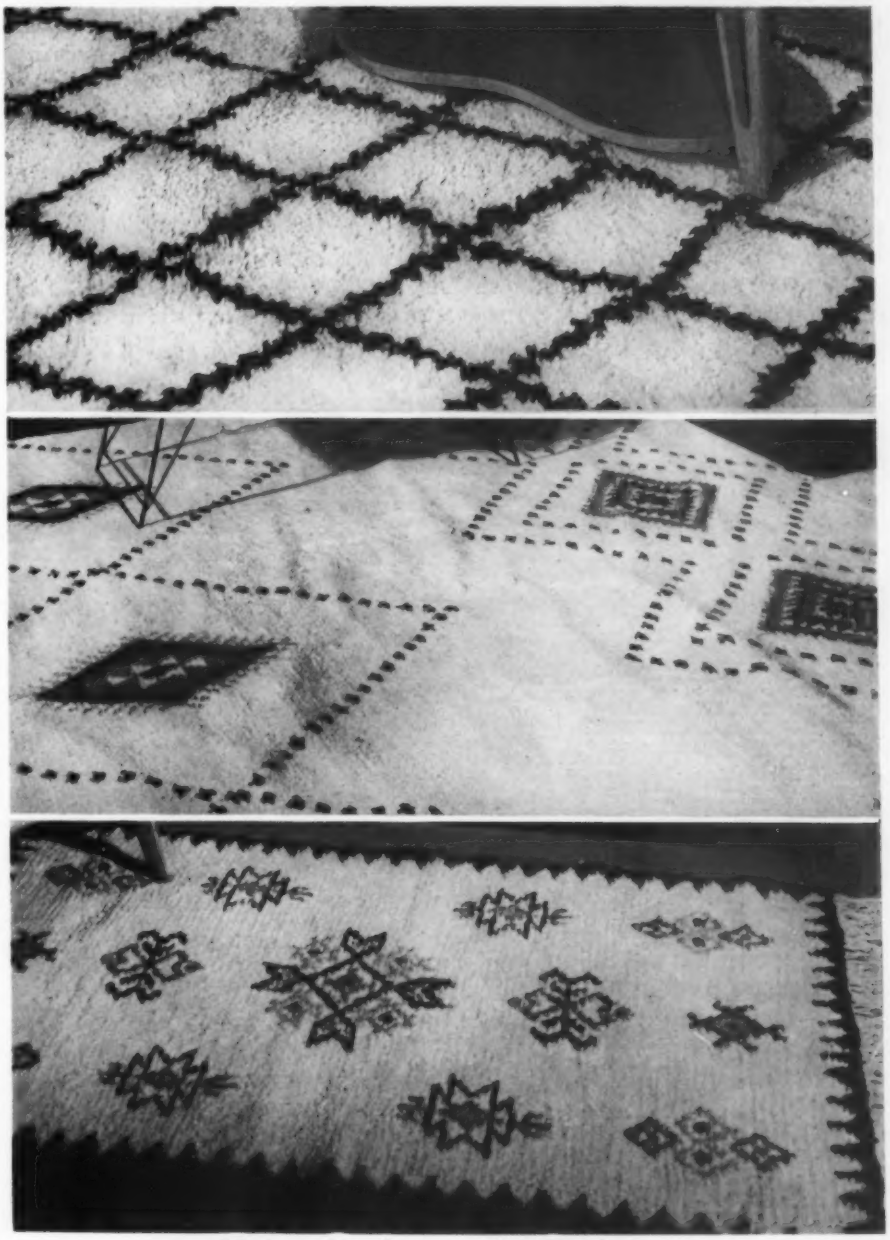


Modern Algerian rugs, described in text.

Wide Variety of Weaving

in National Competition of High School Art

Weavers, latest comers to the National High School Art Exhibition, sponsored for 25 years by *Scholastic Magazines*, New York, reached an astonishingly high level in freshness of approach to their craft, in good design and sound technique as presented by the 20 national award winners which were shown with the 1500 entries in the other 26 art classifications at the Fine Arts Gallery at the Carnegie Institute of Technology, Pittsburgh, Pennsylvania, in May. The 577 winners of cash awards were displayed in Gimbel's auditorium in New York in June.

Judges of weaving, two of them former winners of Scholastic awards, commented especially upon the originality shown by the high school weavers, the imaginative qualities of their work, and their facility in combining yarns into usable fabrics. Their work showed evidence of excellent training and indicates that the ranks of handweavers in the future will not suffer from lack of talented recruits. Members of the jury especially concerned with weaving were Ruth Adler Schnee, Detroit designing partner in a textile printing firm, Thurman H. Hewitt, designer-weaver of Houston, Texas, both former award winners, and Emelia A. Svensen, well-known weaver and teacher of Milford, Connecticut.

Lily Mills of Shelby, North Carolina, was sponsor for the weaving competition this year and, because of the unusually high quality of the entries, announced that the company would sponsor the 1953 competition. This company, one of the oldest cotton mills in the country, has been interested in developing handweaving ever since the revival of the craft began.

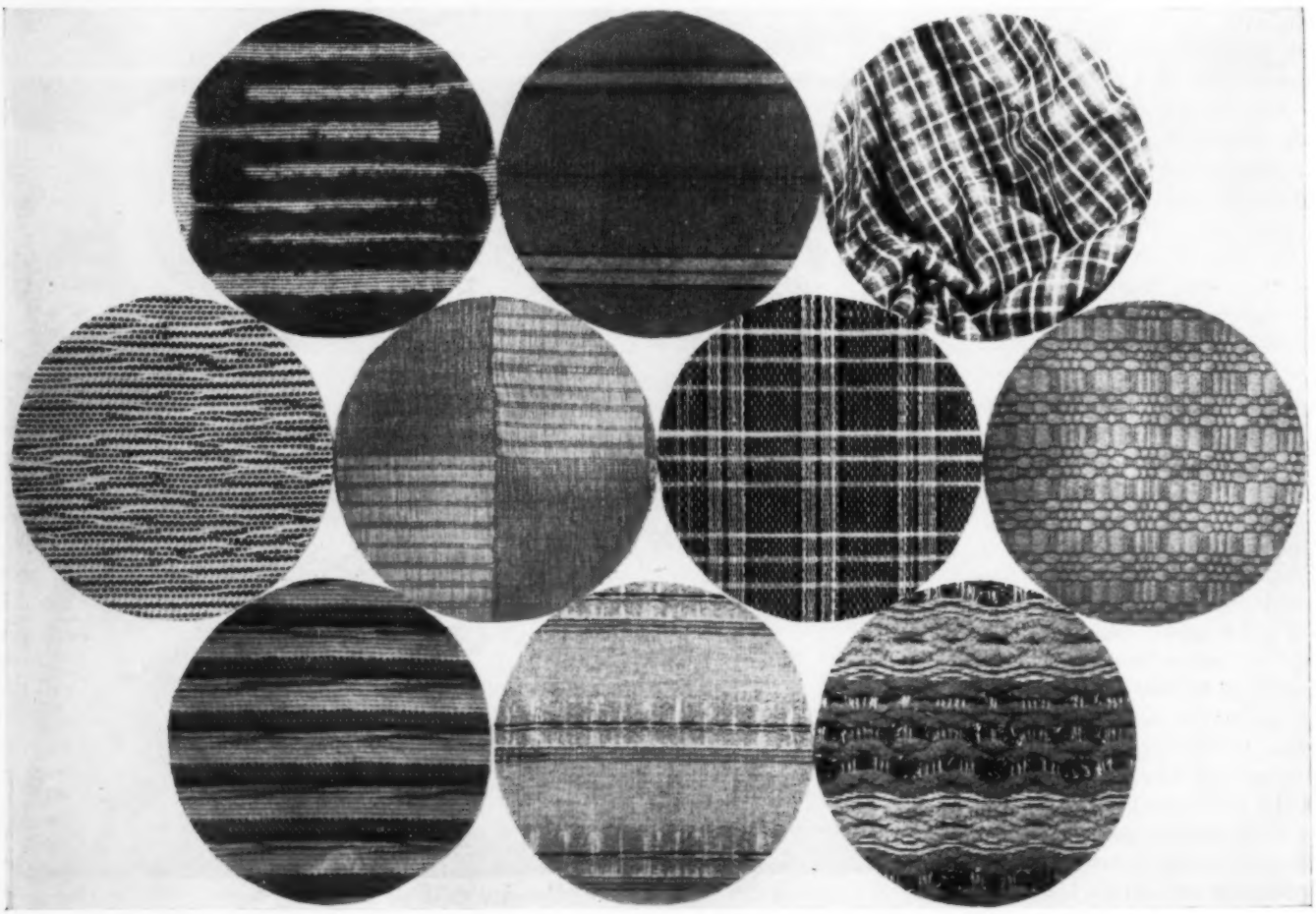
High school weavers ranged in age from 13 to 18. The work of all the award winners is shown in the illustrations. In the first, reading from left to right across the page and from the top row down, (followed by the teacher's name) are fabrics by:

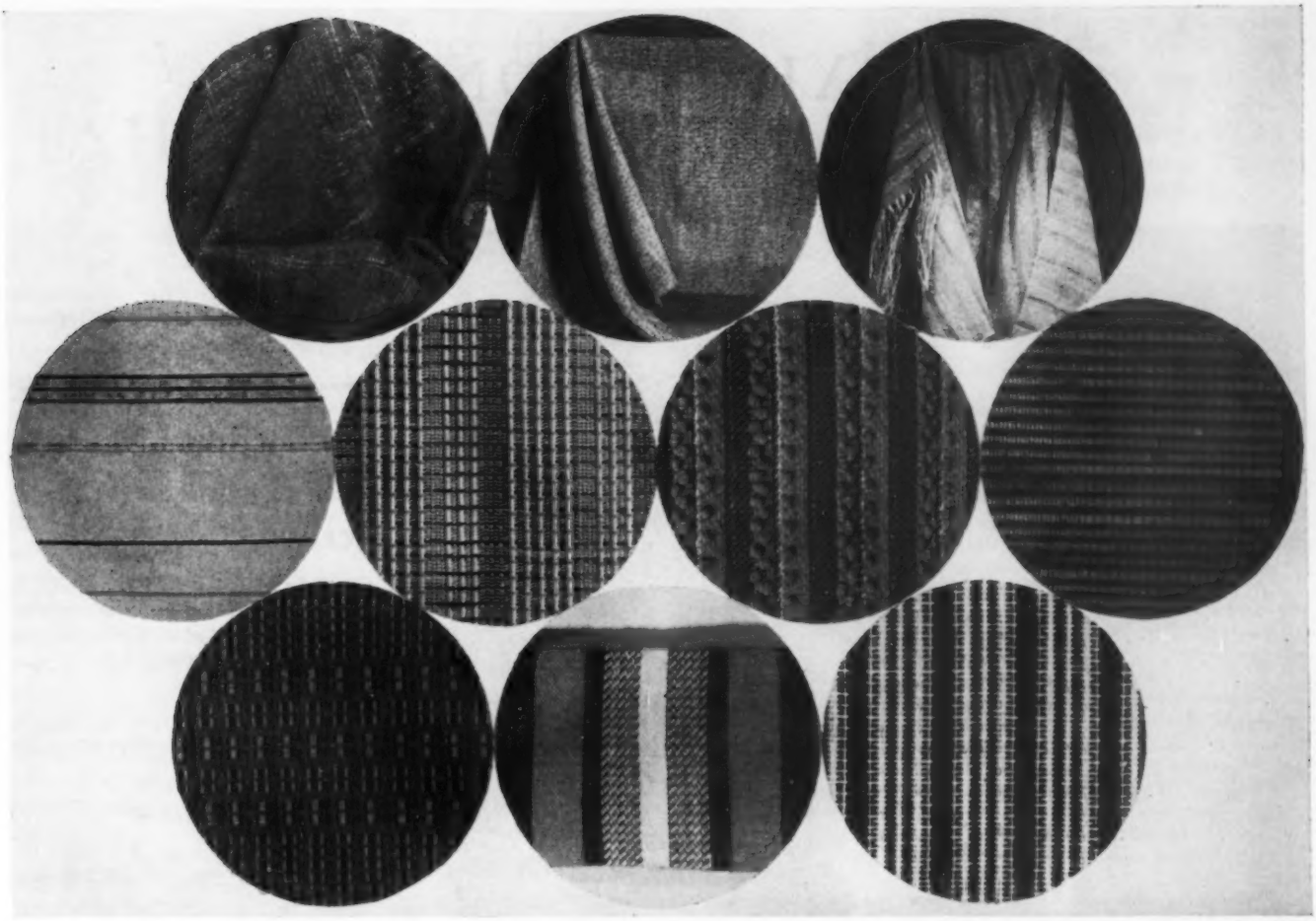
Harland Wright Jr., Woodrow Wilson School, Dallas, Texas. Design for rug in rya knot and tabby; threaded in twill, 23 ends per inch, 2-1-2 ends per dent. Warp: bluish gray carpet warp; weft, bluish green yarn rope, linen rug yarn in light bluish gray. Merle Fincher.

Betty Jernigan, Pascal High School, Fort Worth, Texas. Drapery and upholstery material in plain weave. Creola Searcy.

Joanne Kellog, Kingswood-Cranbrook, Bloomfield Hills, Michigan, suit material; basket weave, 4-harness, two treadles; 20 threads to the inch, two in each heddle and two in each dent; warp, 2/20s worsted, brown, gray, yellow, and tan; weft, same. Mrs. Lillian Holm.

David Smart, San Lorenzo, Cali-





fornia, High School, drapery; warp, white Lily frostone; weft, same in chartreuse and rust, also in blue and chartreuse. Frank Wright.

Janet Tekavec, North High School, Denver, Colorado, panel for back of modern chair; woven on 8-harness loom, in twill 1, 2, 3, 4, 5, 6, 7, 8; two warp ends through each heddle; 40/2 natural linen warp; weft, natural linen boucle and gray linen. Mrs. Jeanette Fields.

Arlen Stewart, North Dallas High School, Dallas, Texas, plaid. Mrs. Katherine Bradford.

Sandra Bauer, Los Angeles, California, High School; rug in crackle weave; double sley; warp, cotton string, tan and white; weft, tan cotton rug yarn, white cotton boucle and cotton chenille. Ethel Wardrop.

Vaughn L. Johnson, W. H. Adamson High School, Dallas, Texas, unusual weave in blue and white. Meredith Schroeder.

Della Schultz, North High School, Denver, Colorado, drapery; twill, 8-harness loom, threading 1, 2, 3, 4, 5, 6, 7, 8; warp 40/2 natural linen, two threads through heddle; weft, yellow, green, and brown wool. Clark H. Spitler.

Hazel Thompson, San Rafael, California, material for pillow top; twill and variation; light yellow warp; weft of boucle in gold and yellow, copper metallic, gold, and light yellow. Mrs. Louise Lewis.

The work of the following is shown in the second illustration, in the same order:

Carol Jackson, Grant High School, Portland, Oregon, stole, for semi-formal or formal dress wear; plain weave, 15 ends to the inch; warp, natural wool, coral and gold metallics; weft, natural wool, coral and gold metallics. Mrs. Marie S. Collie.

Donna Harrington, East High School, Des Moines, Iowa. Mrs. Roena Clement.

Sally Gronsand, Grant High School, Portland, Oregon, scarf, loosely woven, to wear with matching ensemble. Plain weave, 15 ends to inch. Native Oregon worsted in natural with gold metallic and natural nubby yarn. Mrs. Marie Collie.

Ola Nell Dewberry, Paschal High School, Fort Worth, Texas. Creola Searcy.

Jan Campbell, Alex W. Spence High School, Dallas, Texas. Bess Wood.

George Bason, Sunset High School, Dallas, Texas, place mat; plain weave; warp, white cotton; weft, brown carpet warp, gray cotton rug yarn, metallic from unravelled "chore girl." Cleo Hammett.

Anne Saunders, Kingswood-Cranbrook, Bloomfield Hills, Michigan, bamboo mat. Mrs. Lillian Holm.

Mary Lohn, Marshall Junior and Senior High School, Minneapolis, Minnesota, table runner; warp 20/2 blue mercerized cotton; weft grayish blue and metallic. Olgo Stevning.

Donna Harris, Central High School, Omaha, Nebraska, matching hat and purse; tabby in original design; warp, natural cotton 20/2; weft, 4-ply knitting worsted, green, black, and orange. Mary Angood.

B. W. Allen, Alex W. Spence High School, Dallas, M. M. Myers.

The first *Scholastic* awards were offered in 1924 for high school writers, whose work was published in the May, 1925 issue. Art awards were first given in 1927 and the First National High School Art Exhibition was held in 1928 in the fine arts galleries of the Carnegie Institute of Technology, Pittsburgh, Pa.

(*Continued on page* 53)

EXHIBITIONS

of Interest to the Handweaver & Craftsman

OCTOBER

Italy at Work, Toledo, Ohio, Museum of Art. Through October 22.

National Hobby and Handicraft Show, Palace Pier, Toronto, Canada, October 21-23.

Textile Guild of the Society of Arts and Crafts, 145 Newbury Street, Boston, Massachusetts. Annual exhibition and sale. Opens October 7.

Good Design, Museum of Modern Art, New York City, through November 30; Chicago Merchandise Mart, indefinite.

Midwestern College Art Conference, University of Illinois, Urbana. Conference October 30-November 1. Craft exhibition October 30-November 9.

The Scalamandre Museum Traveling Exhibits: Toiles of Today and Yesterday, Smithsonian Institution, Washington, D. C.; A Panoramic Review of Textiles, Trenton, New Jersey, Junior College; The Silks of the Italian Renaissance, Ohio State Museum, Columbus, Ohio; Two Hundred Years of Textile Designs, The Mint Museum, Charlotte, North Carolina; Post-Revolutionary Shrines of America, Norfolk, Virginia, Museum; Neo-Classic Textiles of the Louis XVI Era, The Scalamandre Museum of Textiles, New York City.

The Philadelphia, Pennsylvania, Art Alliance, 251 South 18th Street, Philadelphia, Pennsylvania. Exhibition of weaving by Kathryn Wellman and pottery by Elva Hodges. October..

"Conspicuous Waist," Cooper Union Museum, New York City. Exhibition of men's waistcoats, 18th century to the present. October 30-January 9.

NOVEMBER

International Textile Exhibition, Department of Art Gallery, The Woman's College of the University of North Carolina, Greensboro, North Carolina. November 3-28.

Seventeenth Ceramic National, Syracuse, New York, Museum of Fine Arts. November 9-December 7.

Tropical Weavers of Florida, West Palm Beach, Florida. November 8.

"Good Design," Merchandise Mart, Chicago, Illinois.

Fiber, Clay, and Metal, Helen Bunn Competition for American and Canadian Craftsmen, St. Paul Gallery and School of Art, November 17-December 24. Seminars, November 17-29. Information, Delmar Kolb, St. Paul Gallery, 476 Summit Avenue, St. Paul 2, Minnesota.

Women's International Exposition, 71st Regiment Armory, Park Avenue at 34th Street, New York City. 12 noon to 11:00 P.M., November 1-8.

Tidewater Weavers' Guild, Norfolk, Virginia, Museum. Exhibit and sale in collaboration with Norfolk Museum. Work of craftsmen from Tidewater sections of North Carolina, Virginia and Maryland. Juried show. Entries received at museum until November 3. For information write Tidewater Weavers' Guild, Norfolk Museum, Yarmouth at the Hague, Norfolk 10, Virginia. November 16-23.

Quaker Weavers of Orchard Park, New York, Junior League Club, 595 Delaware Avenue, Buffalo, New York. Exhibition sponsored by the Junior League of Buffalo.Novemer 17-20.

Italy at Work, Albright Art Gallery, Buffalo, New York. November 27-January 8.

"Good Design," Museum of Modern Art, New York City, through November 30.

Midwestern College Art Conference Exhibition, University of Illinois, Urbana. Continued through November 9.

"Conspicuous Waist," Cooper Union Museum, New York City. Exhiition of men's 18th century waistcoats. Through January 9.

DECEMBER

Fourth Annual South Jersey Arts and Craft Show, Haddon Fortnightly Club House, Haddonfield, New Jersey. Sponsored by the Junior Department of the Haddon Fortnightly. Articles on display for sale. Tea served daily. 12 noon to 10:00 P.M., December 3-5.

Good Design, Chicago Merchandise Mart.

Seventeenth Ceramic National, Syracuse, New York, Museum of Fine Art. Through December 7.

Fiber, Clay, and Metal, St. Paul, Minnesota, Gallery and School of Art. Through December 24.

Italy at Work, Albright Art Gallery, Buffalo, New York. Through January 8.

"Conspicuous Waist," Cooper Union Museum, New York City. Through January 9.

JANUARY

Philadelphia Art Alliance, 251 South 18th Street, Philadelphia 3, Pennsylvania. Competition sponsored by Art Alliance for craftsmen within 65 mile radius of Philadelphia. Juried show. Entries must be in by January 31, photographs of large work not later than January 15. For information write Philadelphia Art Alliance.

Italy at Work, Albright Art Gallery, Buffalo, New York. Through January 8.

Good Design, Chicago Merchandise Mart.

Fleischman International Carpet Design Competition, co-sponsored by the Detroit Institute of Arts. Entries in by January 1. For information write art schools, museums, or Arthur Fleischman Carpet Company, 12585 Gratiot Avenue, Detroit 5, Michigan.

"Conspicuous Waist," Cooper Union Museum, New York City. Through January 9.

FEBRUARY

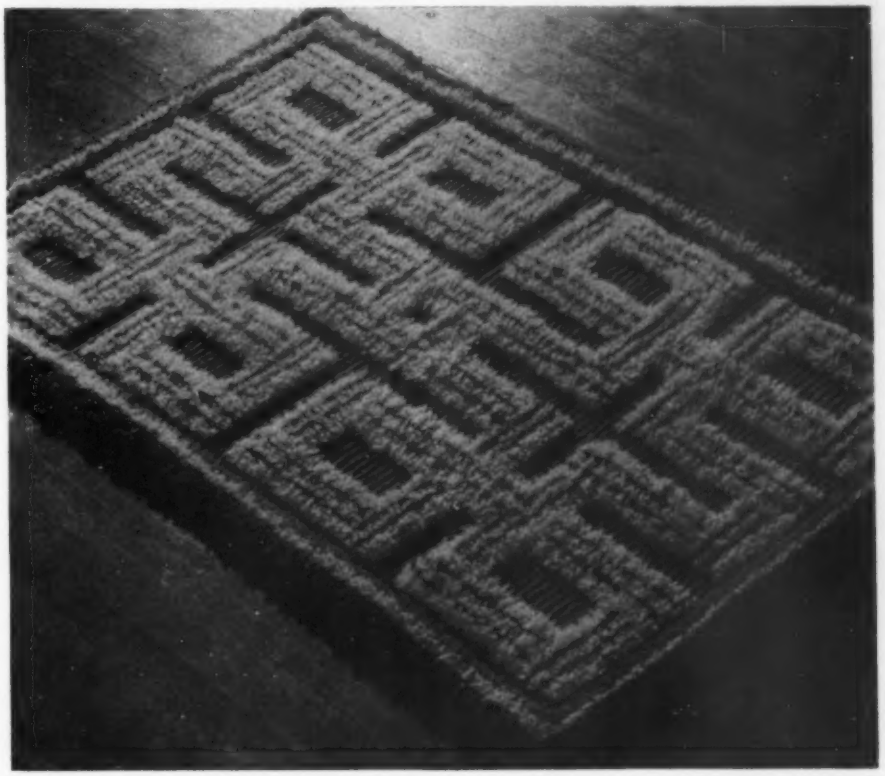
Philadlephia Art Alliance, 251 South 18th Street, Philadelphia, Pennsylvania. Exhibition sponsored by the Art Alliance. February 6-March 1.

London District Weavers, Elsie Lerrin Williams Library and Art Museum, London, Ontario, Canada. Exhibition of Canadian weaving. Competition open to all Canadian provinces and territories. For information write Mrs. W. H. Gemmill, 487 Dundas Street, London, Ontario, Canada. February 6-28.

Italy at Work, Carnegie Institute, Pittsburgh, Pennsylvania. February 12-March 27.

Good Design, Chicago Merchandise Mart.

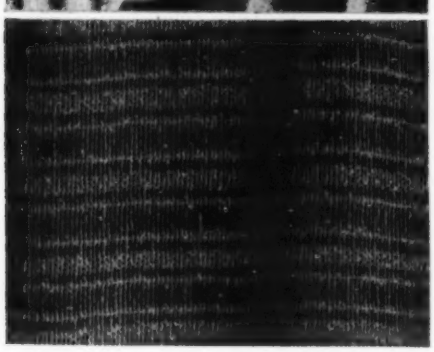
Covering the EXHIBITION CIRCUIT



Rug in half flossa, gray, white, and chartreuse, by Alice M. Schwartz, Lawrence, Kansas, below, and left, top, first prize, weaving, Eugene F. Dobbertin, below, reversible fabric by Toshiko Takaezu, at Wichita, Kansas, Decorative Arts and Ceramic Exhibition.

Everyone interested in woven and printed textiles will welcome the announcement that the International Textile Exhibition will be held again this year at the Woman's College of the University of North Carolina, Greensboro, November 3-30. Sponsored by the department of art and the school of home economics of the college, the exhibition has now been made a permanent part of the college's activities and will be held as a biennial hereafter. Unique in that it is an exhibition for textiles alone, with entries selected on the basis of creative design, it had become of increasing interest not only to weavers and printers of textiles but also to manufacturers, decorators and others interested in original textile design.

"Fiber, Clay, and Metal," the Helen Bunn open competition for American and Canadian craftsmen sponsored by the St. Paul, Minnesota, Gallery and School of Art, will include weaving, ceramics, decorated fabrics, metal, jewelry, woodwork, and enamels. Opening November 17, it will continue through December 24. Prizes amount to $1,000.



The jury will be composed of: Bernard Leach, English potter, Soetsu Yanagi, director of the Imperial Folk Art Museum in Tokyo, and Ruth Lawrence, director of the University of Minnesota Gallery, and will be joined in judging each area by an authority in that medium. In judging particular media they will be advised by Hilma Berglund, teacher of weaving at the University of Minnesota, Shoji Hamada, potter of Koji, Japan, Robert A. von Neumann, jewelry, Iowa State Teachers College, and John Rood, sculptor and author, Minneapolis, Minnesota.

Messrs. Leach, Yanagi and Shoji Hamada will arrive in St. Paul directly from the International Craftsmen's Conference at Dartington Hall, England. While in St. Paul they will report on the results of that conference and conduct the Midwest Craftsman's Seminar, dealing with problems of concern to craftsmen in all fields. The Seminar will be held November 17—November 29. Delmar Kolb of the St. Paul Gallery staff is in charge of arrangements.

With the reviving interest in fancy waistcoats, handweavers will be interested in the exhibition entitled "Conspicuous Waist" at the Cooper Union Museum October 30—January 9, which will include from 60 to 70 examples from the eighteenth century, among them models with sleeves, to the present chosen for richness of fabric and ingenuity of design. Water color designs for elaborate early waistcoats will be included. Although certain tailors are advocating more elaborate waistcoats, they have not yet employed the elaborately embroidered silks, satins, and velvets of earlier models. Among the old designs are those depicting naval battles, hunting scenes, flowers, vegetables, fish, birds, theatrical scenes, cockfights, and bullfights, much in the fashion to today's handpainted ties.

Eugene F. Dobbertin of Rochester, New York, was awarded the weav-

ing prize at the annual Decorative Arts and Ceramics exhibition sponsored by the Wichita, Kansas, Art Association. His entry was an upholstery weight drapery fabric of unusual interest, woven of cotton and rug wool in shades of green and gold in cross twill warp and weft effect. Honorable mentions were given to Blanche G. Line of Urbana, Illinois, for a cotton flossa rug with cut pile in black blue, brown, gold and white, and to Carolyn Nichols of St. Louis, Missouri, for modified twill drapery with warp of mercerized cotton, rayon, and cotton chenille, and weft of two weights of raw silk, linen, and a novelty flecked rayon.

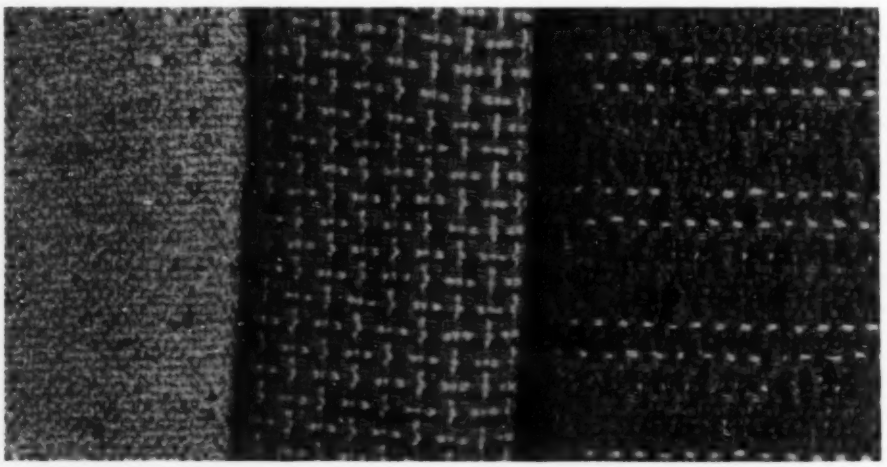
Greatly admired by everyone was the reversible drapery fabric in black, yellow, and gray by Toshiko Takaezu of Bloomfield Hills, Michigan. Unusually beautiful in texture and with excellent draping quality, it indicated a weaver of outstanding ability whose work will become more widely known.

Among other well-designed and constructed fabrics were the following: flossa rug, Mrs. Lloyd Richards, Rye, New York; black and gold drapery, Georgia Chingren, Sioux City, Iowa; warp faced upholstery, wool, linen, and cotton, Sara Mattson Anliot, Cleveland Heights, Ohio; sheer casement, natural linen cloth with applied dyed horizontal bands of black, Jack Lenor Larsen, New York City; evening jacket material, Estelle Henkel, Dallas, Texas; drapery panel, skyscraper design, Berta Frey, New York City; and upholstery, Evelyn DeGraw, Lawrence, Kansas.

The jury selected 72 pieces representing 52 weavers. In all 387 pieces were shown from the 1,450 entries by craftsmen in various fields, from 30 states, Hawaii, and Canada. Members of the jury were: Roger D. Corsaw, Robert Laurent, Fred Meyer, and Rudolph E. M. Brom.

The preliminary crafts conferences, started in 1950, indicated a growing interest in an opportunity for craftsmen to discuss standards of design and execution and compare work with distinguished artist-craftsmen in their various fields. The conference was established by the Wichita Art Association to promote better standards of design and execution in crafts and afford an opportunity for exchange of ideas and methods. This year every state was represented in the four groups, which were directed as follows: ceramics, Antonio Prieto, Oakland, California; ceramic sculpture, Bernard Frazier, Tulsa, Oklahoma; silversmithing, Rudolph E. M. Brom, Utrecht, Holland, head of the department in the Wichita Art Association School; and weaving, given for the first time, Mrs. Maybelle Liebich, Webster Groves, Missouri.—*Maybelle Liebich.*

Mrs. Liebich has been a commercial weaver and a private instructor in weaving for the last twenty years. She attended the St. Louis School of Fine Arts and studied with private teachers. She is a former instructor at the Peoples Art Center, St. Louis, a past president of the Weavers Guild of St. Louis, and a member of the Central States Craftsmen. Her work has won many awards for original design and she has served on juries for exhibitions in St. Louis and for the Wichita show. She is also an interior decorator. During World War II she headed the weaving section of the Red Cross arts and skills program in St. Louis.



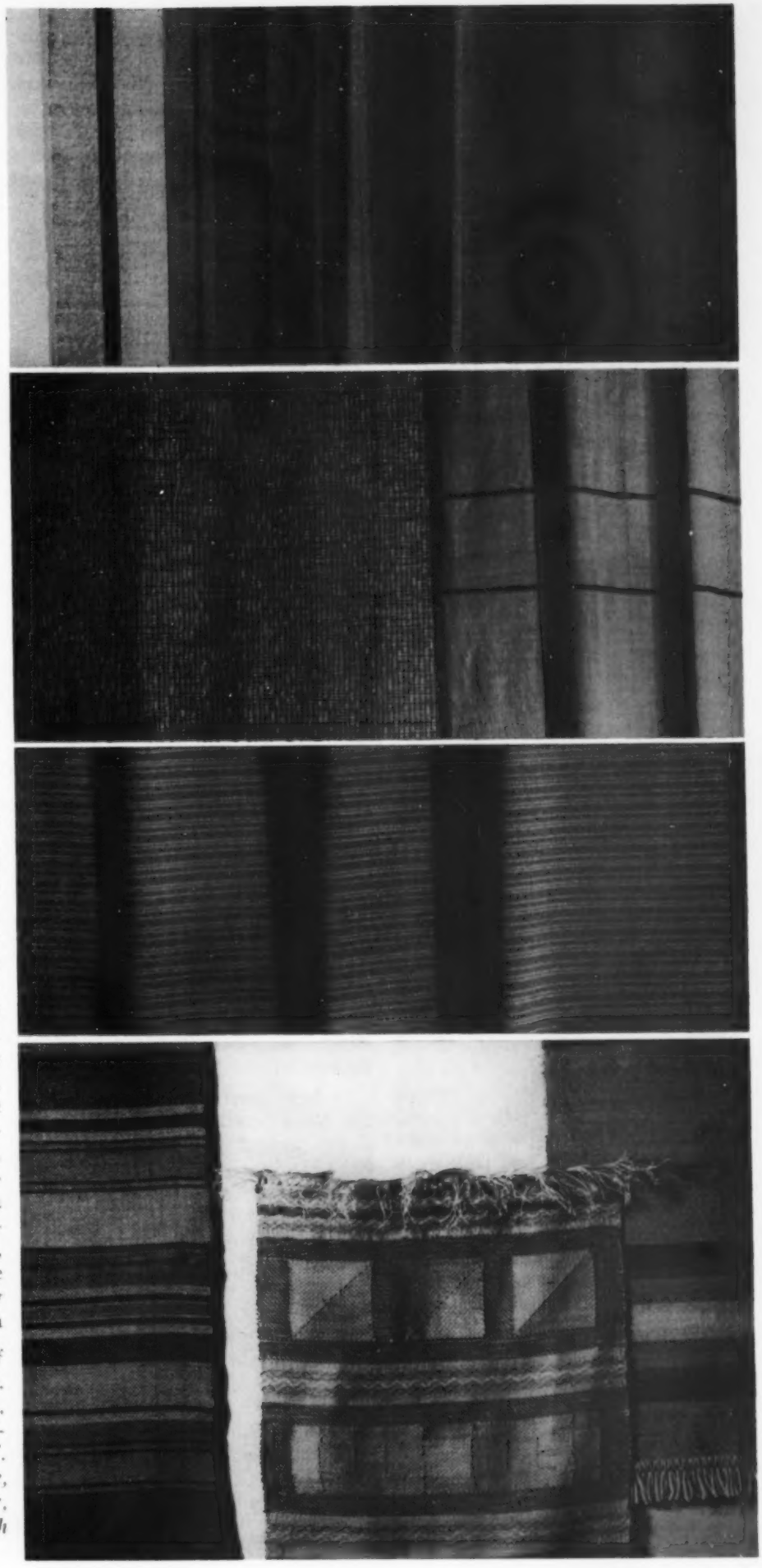
Apparel fabrics by Thelma Hackenberry, Williamsport, Pennsylvania. Left to right. Silk and wool tweed, threaded twill, sett 24 ends to inch, warp, slate and light gray worsted, powder blue zephyr, weft, gray silk tweed with flecks of bright blue and red, tabby weave. Exhibited 1951 exhibition, Pennsylvania Guild of Craftsman, coat in 1952 fashion show from this material. Light weight material in basket weave, 2x2 threading, sett 24 ends to inch. Warp and weft of same material. Warp, 2 ends purple tweed, 2 ends powder blue zephyr, woven in tabby as follows: 1 pick garnet, 1 pick purple, 1 powder blue, with all weft yarns doubled. Heavy material woven on same warp, smooth on wrong side, very rough texture on right. Weft of purple tweed doubled and purple wool and rayon nub. Treadled 1-3 tweed, 1-2-3 nub, 2-4 tweed, 2-3-4 nub and repeat. Use of three treadles in weaving nub yarn keeps nub on top.

Thousands Visit Crafts Fairs

Last summer thousands of persons visited craft fairs which are becoming a notable event in the summer scene. Some 10,000 people saw the annual Craftsman's Fair of the Southern Highlands, in its five days at Asheville, North Carolina, in the midst of the July heat wave, and were impressed not only by the excellence of the work from craftsmen of eight mountain states but also by the unusually interesting demonstrations. Crowds at the 19th annual fair of the League of New Hampshire Arts and Crafts probably surpassed last year's 12,000. The Pennsylvania Guild of Craftsmen, in its Fifth annual fair at Carlisle attracted both native and out-of-state visitors, with a big representation of working craftsmen at its preliminary seminar day. The Society of Connecticut Craftsmen and the Silvermine Guild of Artists presented a notable experiment in the exhibition entitled "The Living Arts," combining crafts, architecture, and industrial design, which brought 2,000 persons to the Silvermine Gallery near Norwalk. Among well-established weavers' guild shows, the Lincoln, Nebraska, Guild's annual June exhibition at Miller and Paine's department store atracted more than 1,500 visitors. Probably best-known

among state fair shows is that at Sacramento, California, which presents a variety of art-in-action. This year an invitation show for weavers at the Texas Fair, Dallas, assembled outstanding work. The Los Angeles County Fair exhibition at Pomona assumed more the appearance of a national event. More about these last three in later issues.

The work of 125 artist-craftsmen from eight Southern states in the juried exhibition at the Craftsman's Fair showed that many, the weavers especially, have advanced far into the field of contemporary design. They proved that they can depart from their traditional designs, yet keep their unique flavor as well as their sound foundation of craftsmanship. Miss Marian Heard, head of crafts education at the University of Tennessee, and Miss Jane Glass of Radnor College headed the exhibition committee. All the fabrics displayed not only showed good design but were definitely usable, with good choice of colors, many achieved through skillful use of vegetable dyes. Table linens were perhaps more traditional. Among the excellent rugs shown was one by Mrs. Walter Bebb in natural and dark green wool strips, with the design formed by the apparently casual spacing of the green. Among weavers represented in the exhibition and at the Fair were Mrs. Tina I. McMorran, Miss Marian Clements, Miss Clementine Douglas, Mrs. Eileen Pobst, Miss Hannah Norwood, Mrs. N. B. Ashe, Miss Charlotte Beaman, Miss Irene Beaudin, Miss Dorothy M. Fuldner, Mrs. J. F. Gardner, Miss Harriet Gill, Mrs. Edgar B. Grier, Mrs. Charles Lighter, Mrs. George K. Patterson, Mrs. Daniel C. Sullivan, Miss Marion Van Gorder, Mrs. Cecelia Taylor, Mrs. Donald S. Aitken, Mrs. Marjorie Chalmers, Berea College Student Industries, Arrowcraft Shop, Cherokee Indian School, Qualla Arts and Crafts Cooperative (Cherokee), Alpine Community Crafts, Cabin Weavers, Valhalla



Reading down. Drapery in shades of rose, Penland Weavers and Potters. Left, upholstery, Tina I. McMorran, black, green, and white. Drapery, yellow, stripes in red, Marian C. Clements. Drapery, shades of beige, Dorothy Weichel, Left, Striped fabric, Arrowcraft shop. Center, Swedish variations by Hannah Norwood.

Hand Weavers. Aside from weaving, Mrs. Matt Turner West's huge braided cornhusk rug was of great interest as were the Cherokee Indian baskets and wall panels, woven in their traditional designs which have a fine "contemporary" feeling.

The Pennsylvania weavers' fashion show was an outstanding event of the Pennsylvania Guild's fair, surpassing their first two efforts. It was under the direction of Mrs. George Schobinger who served as announcer. Attracting special attention were Dorothy Clymer's tailored suit of white raw silk and her two cocktail dresses, one in raw silk with elaborate metallic trim with which she wore a spun silk shawl in Spanish lace weave, and one of blue raw silk with silver trim; Mrs. Roger Millen's black wool suit with short cape lined with gray and yellow plaid and Mr. Millen's matching plaid sport jacket; the Millens' skirt and jacket of Scotch wool in autumn colors, for college or country wear, modeled by Miss Marie Weinmayr; Bonnie Gordon's yellow poodle cloth coat, Ethel Houseal's turquoise cotton sun dress with white rayon pattern bands; and Mrs. Earl Smith's white raw silk suit in 6-thread herringbone. Adding to the interest were a man's plaid worsted sport shirt by Mrs. Schobinger; mother and daughter skirts by Marie Winton; blue wool top coat, Mrs. Martin Gavetti; light green wool suit and hat, Marion Lord; wool coat, cotton skirts, and fine wool and metallic stoles, Thelma Hackenberry; raw silk and gold evening coat, Helen Skirm.

Awards for distinguished craftsmanship in weaving for the exhibition went to Mrs. Hackenberry, Williamsport, for purple wool coating, a light blue stole, and table mats and napkins in yellow nub yarn and white braid; Kathryn Wellman, Philadelphia, effective use of texture in drapery and other fabrics and to Dorothy Clymer, Philadelphia, for her ornate silks. Miss Wellman's fabrics were used for shades in Elva F. Hodges' ceramic lamps and inserts in her leather handbags. Miss Hodges won a special mention for pottery.

Special mention in weaving was given to: Lulu S. Rennell; Anna Albright, aprons; Muriel Sweeton, red linen and seagrass place mats; Marie Winton, apparel fabrics; Sara Anliot, novelty drapery and upholstery. Other interesting pieces were those of Marion Deweese in a variety of weaves and materials, bamboo screen and linen towels by Mary Douglas, and a tablecloth in copper and blue check by Janet Eshelman who won a distinguished craftsmanship award for a leather bag.

Judges were Jay W. Carey, professor of art, New Jersey State Teachers College, Mrs. Walter Reinsel, Moore Institute, Philadelphia, and Orrin Thomas A. I. A., Collingswood, New Jersey. Miss Jane Davidson of New Cumberland was chairman of the fair and Mrs. Addis Bowles and Mrs. Viktor Weinmayr of the exhibition. Mrs. Donnell B. Young of Bethesda, Maryland, conducted the weaving seminar.

Too few of Connecticut's good weavers were represented in "The Living Arts" and the weaving shown was rather more good examples of weaving now in the market than of imaginative, advanced design. First awards in weaving were given to Edna Vogel and Mrs. Elizabeth Graham Thorsen for rugs. The second award went to Jan Morris for a green wool stole with gold border, and honorable mention to Margreta Ohberg for a tapestry mat. Other weavers included were Evelyn Neher, Evelyn Straub, and Ruth Wilson Bishop. Members of the jury were Freda Diamond, designer and consultant, New York; Louisa Dresser, curator, Worcester, Massachusetts, Art Museum; and John Vassos, president. Silvermine Guild of Artists. The architectural and industrial design sections of the show were invitational.

A high general level characterized the Nova Scotia crafts shown in the eighth annual Craftsmen at Work exhibition sponsored by the division of handcrafts of the department of trade and industry and held this year at Halifax in August. Very few professional craftsmen are found in the province; most of the craftsmen work only for themselves or to supplement income if possible. Many were trained in the classes of the division of handcrafts, where emphasis is placed upon good design and sound execution, although most of their graduates will work as amateurs. These classes also encourage design distinctive of Nova Scotia and the use of native materials—wool, clay, wood, and stones for jewelry.

Weaving represented a wide variety, including upholstery and draperies in contemporary design, sophisticated tapestries, fine tweeds and homespuns some of vegetabled-dyed, handspun yarns, authentic tartans, and ecclesiastical pieces. Excellent designs in draperies were shown by Helen MacDonald, some woven by her and some by Rena MacLean. Vegetable dyed yarns in unusually beautiful colors were displayed by Mrs. Edith Bethune, who is also a weaver. Mrs. May D. Stronach also is known for her vegetable dyed yarns. She exhibited fine tweeds and homespun. Tartans came from the Gaelic Foundation and Mrs. Alex MacAulay displayed a handsome costume for a Scottish dancer. Krystyna Sadowski's tapestries and rugs, a variety of work from the Star of the Sea weavers and Normaway Handcrafts, Mrs. Bessie R. Murray's evening bags in very fine silks, nylon, and metallics, and work by Mrs. Rena Brewster, Mrs. R. C. Smith, Joyce Soley, multiple harness weaving by Dorothy Hill and Evelyn Longard, with other excellent work, and a wide range of other crafts made up a show which could compete with professional groups elsewhere.

Miss Mary E. Black is director of the handcrafts division with Miss Helen A. MacDonald as assistant and a staff of teachers who work throughout the province.

The work of some 30 teacher-craftsmen will be on display at the Midwestern College Art Conference which will be held at the University of Illinois, Urbana, October 30—November 1, with the exhibition continuing through November 9.

The theme of the conference will be the role of the universities in art and one section will be devoted to crafts, with practising craftsmen on the program. Lectures, discussions and exhibitions will be open to the public.

Weavers were included in the second invitational exhibition of the work of American craftsmen, which was part of the annual Festival of Contemporary Arts held at the University of Illinois at Urbana for a month last spring. Great interest was shown in their work and according to present plans weaving and other

(*Continued on page* 46)

Weaving Classes at the Montclair Museum

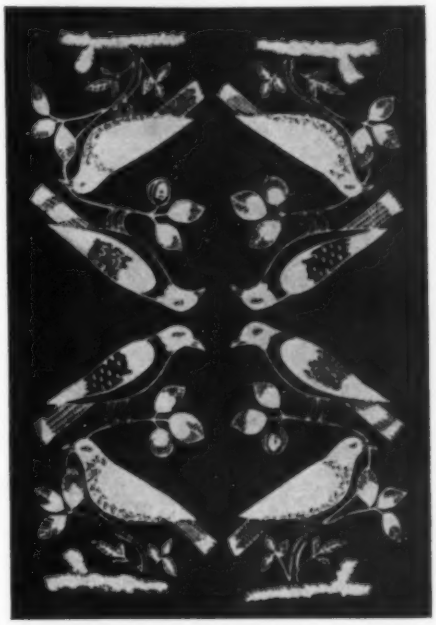
Weaving classes are included in the comprehensive program of art education for children and adults offered by the Montclair, New Jersey, Art Museum. Mrs. Alice A. Stuart has been in charge of the weaving classes since 1945. They offer training in fundamental processes of the craft and encourage development and weaving of original patterns. Classes are held from October 1 through April 1 with the second semester opening January 22. An annual exhibition of student and faculty work is shown at the close of the year.

The Montclair Museum was founded in 1912, the first in the state and the only one devoted exclusively to art. It is supported entirely by memberships, gifts and endowments. It is known for the Rand North American Indian collection, its collection of rare and ancient glass, its English and French silver collection, its excellent library, and exhibitions which attract widespread attention.

Pennsylvania German arts and crafts, both traditional objects and modern interpretations, were included in a noteworthy exhibition at the Museum last spring.

The linen show towel illustrated here, dated 1856, was loaned by the Philadelphia Museum of Art. For the Pennsylvania German needlewoman, show towels substituted for the more familiar sampler and also served the useful purpose of covering the towels in daily household use. The motifs incorporated in the design included such favorites as the Tree of Life, the tulip, the peacock, and the distelfink (traditional bird form).

"The flowing, curved lines that distinguish these motifs of the Pennsylvania German from the folk art of any European country; the warmth of the textile colors created from indigo, from the butternut tree, from black oak and hickory, sumach, sassafras and poke-weed"—are only a few of the elements that give this work its "peculiar charm," according to the museum bulletin. Not only did the museum consider the historical aspect important, but even greater value lay in the fact that the exhibition portrayed Pennsylvania German arts and crafts as being "living and vital forces of today through the inspiration furnished to contemporary artists."

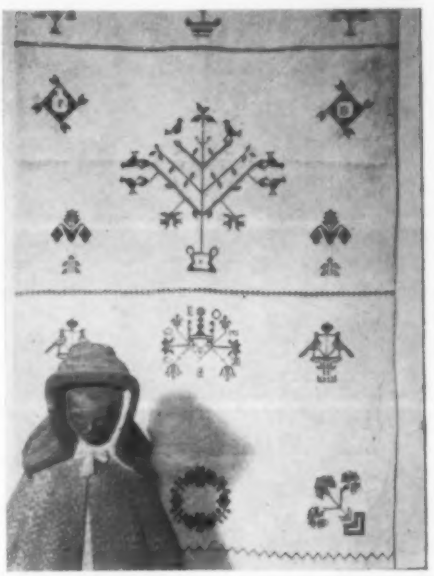


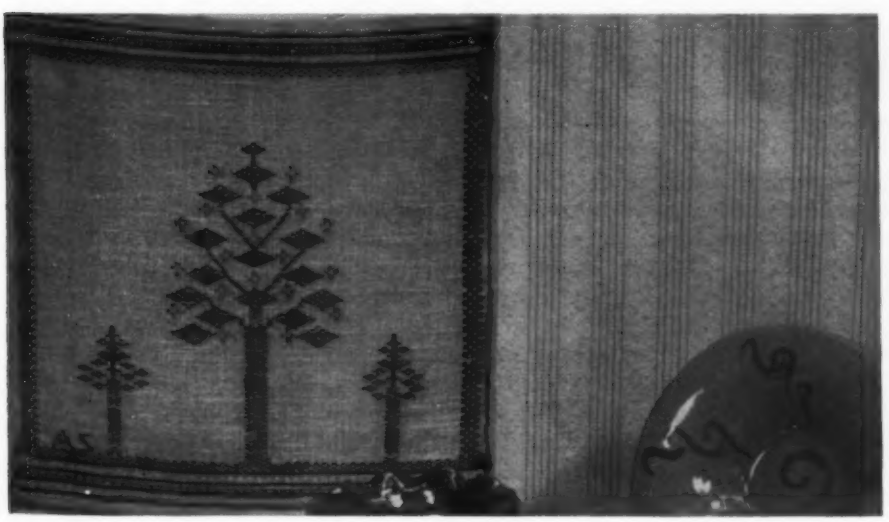
An outstanding example of contemporary interpretation of the traditional motifs is the luncheon cloth, in green and white, by the late Marguerita Mergentime, noted textile designer, loaned by the Brooklyn, New York, Museum. The birds (illustrated here) form the center of the cloth. The pattern was adapted from the steel pen flourishings which were an outgrowth of the elaborate calligraphy used in the *fractur,* or birth certificates, either elaborately done with quill pens or printed from quill originals. When the steel pen succeeded the quill, it was used not only for writing but for drawings and decorations.

Modern Pennsylvania weaving included work by Marguerite P. Davison, Swarthmore, June Keyser Adams, Plymouth Meeting, and Margaret R. Paulus, Sinking Spring.

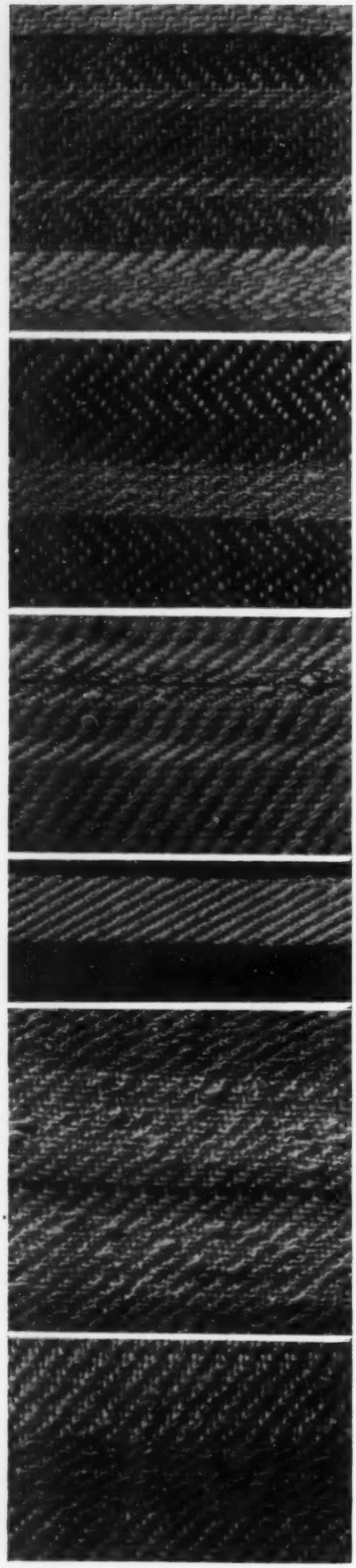
Painters and designers, as well as ceramists, will be interested in the forthcoming 17th Ceramic National, sponsored by the Syracuse Museum of Fine Arts, the Onondaga Pottery Company of Syracuse, New York, and

(*Continued on page 64*)





Top, Marguerita Mergentime design. Right, Linen show towel, 1856. *Bottom, wall hanging, Swedish motif, background, neutral linen, different tones and sizes. Twill, inlaid on two treadles, green, brown, pale pink wool. Right, upholstery, twill,* 30/2 *natural linen weft. Warp, rayon, boucle in broad stripe, three finer threads, high sheen, slender alternating stripes, chartreuse and persimmon, in heavy chainette. By Mrs. Stuart. Pottery by Phyllis Blundell.*



Opportunities for Handweavers in the Textile Industry

An instructional philosophy which relates, at all points, handweaving with all its creativeness to the problems of power loom production distinguishes the textile design and weaving classes of Sonja Alexandra Belin, supervisor of the weaving program at the City College of New York's Midtown Business Center. She bases her teaching methods on a family tradition which goes back seven generations and on an assumption that products of handweaving which cannot be readily translated for power loom production limit the market available for the handweaver's artistry. It is her desire to see the inventiveness and creativeness of the handweaver incorporated in the daily product of American mills. As supervisor of the Midtown Center's weaving program, Miss Belin has introduced warping, design and fabric construction techniques which conform with general procedures in mills.

Her curriculum is purposely left pliable to allow for the fullest realization of each student's particular talents. In line with the plan for individual attention, classes are limited to 12 students. Four harness looms are used for the most part. After designs are worked out on graph paper and woven according to pattern, students are directed to improvise and experiment, following definite guiding principles.

A thorough grounding in basic principles of design acquired during ten years of art school training, added to work in raw materials and modern warping techniques at the nation's largest textile schools, has given Miss Belin the foundation for forecasting probable successful designs. The desire for creative work in fabrics which has resulted from all this training is behind Miss Belin's favorite sales talk concerning the gap which exists between design and production in the textile industry. She believes it can best be filled by women if they will only take advantage of the opening.

At present much designing for industry is done on paper instead of on a handloom and according to Miss Belin, there are lapses in time up to eight weeks between submission of the sample to the mill and return of the woven sample blanket. The time lag would be bad enough by itself, she says, if the sample was a faithful reproduction of the original design but generally it isn't. The design on paper which carried a hoped-for texture and pattern frequently turns out to be quite another thing when reproduced on the power loom. The result is a waste of weeks and of thousands of yards of yarn. Frequently samples from the power looms run over 100 yards or more. The waste in such operations is obviously enormous. Miss Belin's plan, which she holds up to students as an inspiration, is the setting up of weave rooms in the executive offices and sales offices of all the major mills. Under this plan customers and executives can have their ideas for new designs worked out within hours and the idea will be presented in the actual fabric, using the same yarns which they use in their mills. Here lies the opportunity for women who have the craftsmanship and creative talent to return to American textiles the artistry which once was given to the fabrics woven in home manufacture, says Miss Belin. Although a great many men from the textile industry enroll in her courses, she thinks the weave room is the place for new careers for women in industry. These careers will be especially satisfying for women, because they offer both economic success and a satisfying means of expression.

With this goal in view Miss Belin's students concentrate on turning out endless numbers of small swatches at the rate of about a yard an hour. Those who are working as technicians and designers in industry report a considerable amount of success in convincing their companies that handloom designing is the most efficient method for industry. One young designer engaged in designing bedspreads for one of the nation's biggest brand names in household linens has switched from the paper designing she did before studying with Miss Belin to designing

(*Continued on page* 64)

Samples woven on solid white warp on a 4*-harness loom, threading* 4-3-2-1, *by beginning student in City College classes.*

Rugs

(*Continued from page* 33)

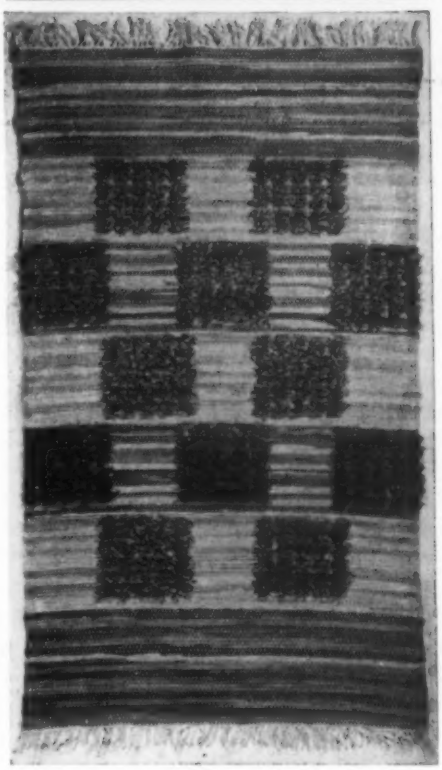
however, using 40,000 to 50,000 knots a square yard.

Her loom is a modern version of the primitive loom, made of two upright beams of wood, unusually heavy, fixed parallel to each other. The distance between fixes the size of the rugs. Warp threads must still be stretched one by one between rollers at the top and bottom, although she has invented a few procedures and devices which facilitate warping. She uses the Ghiordes knot, with the pile usually covering only part of the surface. A rug six feet wide, with 16 knots to the square inch requires 480 warp threads. Knots are bound in with two or three weft threads. After every four or five rows, the rug grows an inch. For a rug six feet wide, it will take 288 knots every row and four times that many, or 1,152 knots, to make that inch.

Design achieved through texture, rather than definite pattern is, she believes for the contemporary weaver the most satisfactory way of producing a fine quality product, which can be an important element in interior design. The deeply satisfying look and feel of a handmade rug result from a successful blending of materials and designs. The qualities of soft woolen or more resilient worsted yarns, variations in natural tones of wool or linen, the uncounted combinations of weaves and knots possible on a vertical loom, variation of surface through cutting of the pile, all combine to produce original effects.

The translation of a water color sketch into a loom pattern is to her much like translating poetry from one language to another. Its beauty must not be lost while adapting it to the squares on the graph paper on which each square indicates a knot of wool to be tied and woven into the rug.

Wool and linen are her favorite materials with careful attention given to the blends of wool forming yarns. Since rug making consumes so much time only the finest quality materials should be used, to give the best possible wear. Wearing quality is one of the most important elements in a rug, along with the careful attention to detail which always is the mark of the skilled craftsman.



Modern Swedish rug, rya knots. Half flossa knots, weft of blanket strips, shades of beige. Mrs. Elsa Bockman, Boston Society of Arts and Crafts.

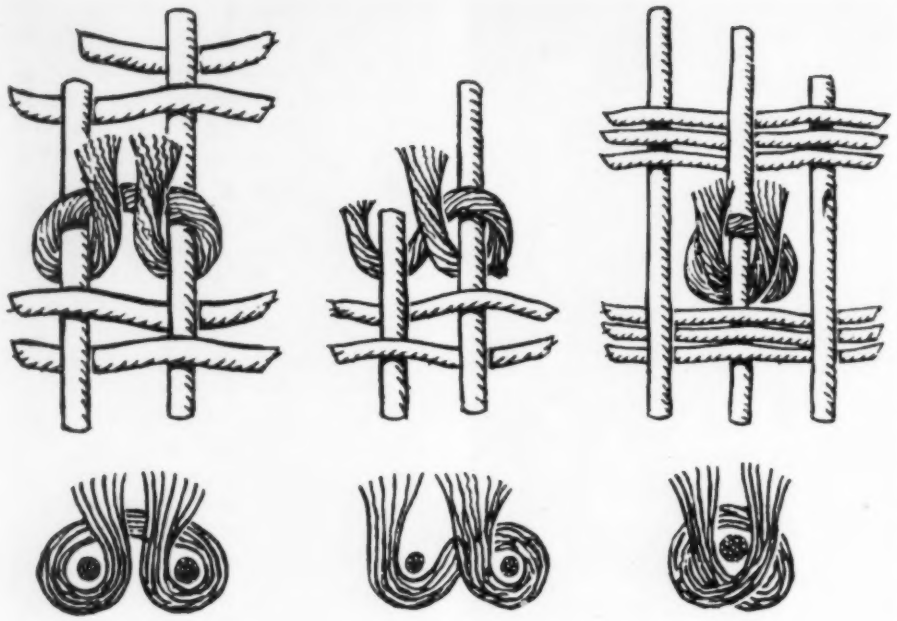
Moroccan weavers through the centuries have maintained the high quality of their rugs to an outstanding degree. Many fine examples may be seen at B. Altman and Company in New York, including those made by desert tribes and in city workshops.

The tribal rugs are one-of-a-kind and each expresses the creative art of its own particular designer. These rugs were originally woven by native tribes for their own exclusive use and were not sold. The design and the aspect of the rugs vary from one tribe to another because workers are inspired by their familiar landscapes, by the mountains, by the color of the sunset and by the color of the earth or of their fields and also by the white snow on the mountain tops. For that reason rugs woven in the mountains have long, white, snowy wool hairs. The men of the tribes choose the design, work on the mounting of the wooden looms, superintend the assembling of the colors, and see that the knots are correctly placed but they leave the weaving to the women. The little girls, at 4 or 5 years of age, begin to contribute to the work by bringing the colored wools or by tying knots.

From the "Moyen Atlas," or middle-mountain region come the tribal rugs that have a very deep pile and extremely simplified designs, generally in monochrome. This type of long-pile rug appears to be absolutely plain on the side we regard as the "right side." However, a geometric design appears on the reverse side. The natives use the long pile side of the rug in the winter season in order to keep their naked feet warm. Sandals are worn only outdoors in Morocco, and not in the tents. Then, during the summer time, the reverse and patterned side of the rug is turned up, because it is cooler underfoot.

Appearing in this collection is also a well known rug from the Haouz region, south of the mountains. This rug, called "Chichaoua," is a plain background rug dyed madder-red. An extremely stylized small design occupies each of two corners of this rug. This little broken line, simple in form, represents a river or a serpent.

The city-made rugs, woven especially for export, are, in general, produced in workshops under the close supervision of overseers and specialists of the Moroccan Arts and Crafts Services. They display great simplicity of style, are made of medium length pile wool; they are of consistent quality and in desired dimensions. Predominately monochromatic in coloring, they use only deep, rich browns, black and grey on a creamy white background. Altman's show



FIG·1 FIG·2 FIG·3

these rugs in three different patterns and also in solid white. They are all made of 100 per cent top quality wool. Consequently their wearing quality is superb.

Three kinds of knots are employed in rug and carpet weaving:

The Ghiordes, or Turkish knot, is named from Ghiordes, a weaving center in Asia Minor, and is the most commonly used. It is found in nearly all Turkish, in all Caucasian and English, and in many Persian carpets. When the texture of the carpet is not particularly fine, it is the most satisfactory type. Formed on two adjacent warp threads from a short piece of yarn—or in practice the end of a long piece which is afterwards cut off—it lies across and in front of these and its ends pass around behind and in front of the warp threads, emerging together between them. The free ends lie below the transverse part of the knot, that is, nearer to the previous layer of knots. When the warp lies in two layers (sometimes so many threads are used that two layers are formed) the knot becomes rather less symmetrical. A knot is tied on each pair of warp threads, with none left bare; and when the next and subsequent rows are tied, the same warp ends are kept paired together. Very occasionally the pairs are broken up and the knots tied in an additional line in traditional designs but this is done only when diagonal lines appear in the pattern of the carpet. Figure 1.

The Sehna or Persian knot derives its name from Sehna, a carpet weaving village in Iran. It is found in the majority of Persian, Central Asian, Indian, and Chinese carpets and is suitable when a close pile is required. It is tied on two warp threads but is less symmetrical than the Ghiordes knot. The yarn completely encircles one warp thread; one end comes to the front between the warp threads and the other passes behind the second and to the front outside it. As seen by the weaver the completely encircled warp thread may be either the right or the left of the pair. Of the two varieties, the first is more common. When the warp lies in two layers, as it usually does on carpets using this knot, the encircled warp is in the front layer. Warp threads are kept in the same pairs. Figure 2.

The Spanish, or single warp knot, is not nearly so common as the others, but is found in most Spanish carpets. Tied on a single warp thread, it is hardly a knot at all. The yarn completely encircles the warp thread; the two ends cross at the back without reversing their direction, and then come to the front, one on each side of the warp thread. The knots in one row are tied only on every other warp and those on the next row on alternate warps. This produces slightly serrated vertical lines while diagonal ones are smoother than usual. Figure 3.

In the Scandinavian type of pile fabrics called *rya*, although the knot is the Ghiordes knot, the pile lies flat, because there are many tabby shots between each row of pattern shots (The number of tabby threads between each row of knots depends on the length of the pile, which lies flat and conceals the tabby.) The knots are done over a stick and cut to make the ends even. There is a regular knife and a bar with a groove in it for this purpose. Flossa and half-flossa is another Scandinavian type. In this the pile stands up and, in flossa, it may cover the whole surface of the rug or fabric, but in half-flossa only certain sections are covered. Pile may be cut or uncut.

All knots are tied at right angles to the warp threads. In the early rugs, all knots were tied in rows. Modern weavers vary them according to the design and may leave large sections of the foundation fabric uncovered.

Warp for carpet or rugs must be of strong thread with a minimum of stretch. It is usually 2-ply and must be tightly spun. The most common material is undyed sheep's wool, although sometimes colored warps, including bright red, are used. In most of the early Persian carpets the warp is pure reeled silk which is satisfactory for finely knotted varieties. Egyptian cotton, in plied yarn, makes a satisfactory warp. For early English carpets 3-ply hemp usually was used.

The fineness of texture of the carpet is determined by the closeness of the warp threads, which depends upon the gauge of the reed or the stoutness of the thread. Many old carpets are spaced from about 9 to 45 threads to the inch with some Persians having as many as 62. Warp threads often are packed so closely that they will not lie in one plane but fall in two layers after weaving has proceeded for some time. Sometimes both layers are visible from the back of the carpet.

The weft more often than not is the same material as the warp but the actual thread need not be so strong or so tightly spun. Colored yarns are chosen according to the design. Each shot of weft is inserted through a simple shed in the warp, over and under consecutive warp ends, except when several workers at one loom each carry the weft across a section of the carpet in separate sheds. This plan is sometimes utilized for enriching certain parts of the carpet with weft of different color or superior

(*Continued on page* 51)

A Modern Weaver Designs a Carpet

When the G. E. Englemans of Fort Worth, Texas, began to plan their new home more than a year ago, Mrs. Engleman, (a well-known weaver there,) decided that weaving the carpet would be her job. She met with enthusiastic response from the architect, the contractor and her husband. Since emphasis in the decorative scheme would be on "Early American" it was thought that a handwoven carpet would fit in well with the general scheme. The carpet is now in place in the living room and dining room and has attracted a great deal of favorable attention but there were many times when Mrs. Engleman was at work on it when she didn't think her original idea had been so good.

The carpet is woven of wool chenille weft in varied colors, with ramie warp. She began by ordering one pound of the chenille from which she wove an 18" x 18" square which she then weighed so that she could calculate the amount needed for the entire carpet of 37 square yards. It required 200 pounds of chenille. She had to take the colors sight unseen and hope they would blend well since the firm did not sort colors.

She chose ramie for warp because of its strength and because she had liked what she had used on other projects, although that had been a finer grade. The 80-yard warp required 14 pounds of 1/10 lea. She set this 7 threads to the inch, 30 inches wide on her counterbalanced loom. This finished 28 inches wide.

Her only objection to the ramie was that it fuzzed on the loom and to counteract this she "dressed" the warp threads as she went along using a wave-set (yes, the kind used on hair) containing lanolin which she put on with a rubber sponge. This worked perfectly. For the weft she used one shot of chenille and one of gray carpet warp to act as a binder.

She had sorted the hanks of wool chenille according to colors and wound them into balls, a job which required hours and hours of work and had to be done outdoors, because of the lint. She then weighed each color—blues, greens, beiges, and grays—and gave the data to Mr. Engleman who worked out the design. It was decided that if equal amounts of the different colors were used in every 21 shots and the same order repeated, the carpeting would be the same throughout.

Each shot of chenille had to be brushed up with a hairbrush while the shed was open. She tried a comb at first but the brush worked much

(*Continued on page* 51)

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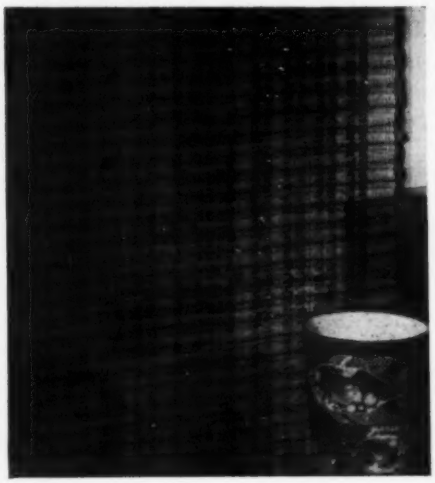
Exhibition Circuit

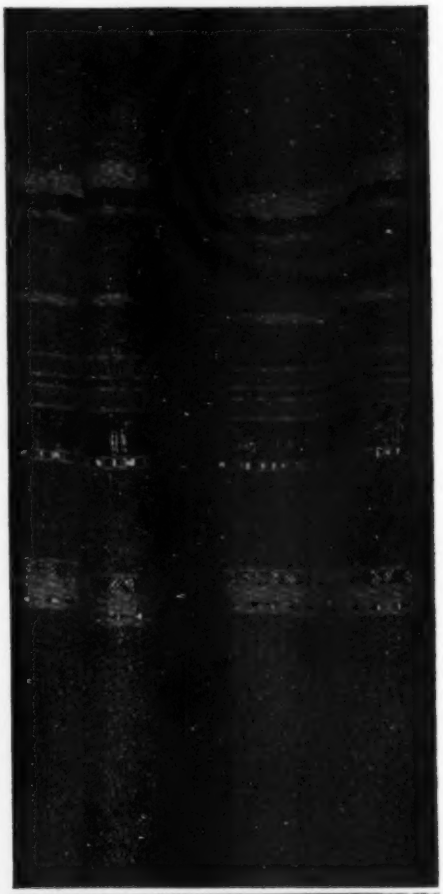
An exhibition of handwoven textiles, including a wide range of textures and patterns, has been prepared by Robert F. Heartz of Epping, New Hampshire, which is available for distribution to weavers' guilds, schools, and others interested. Primarily to aid in the study of textiles, it is composed of two groups of 12 place mats in 2, 4, 6, 8, 10, 12, and 16-harness weaves. Each textile also has other uses which are discussed in accompanying explanatory material, including drafts and directions. Each mat is mounted on a folding panel, suitable for display or individual study. Mr. Heartz has been a professional weaver and teacher for many years and has had extensive experience in occupational therapy and power production of textiles.

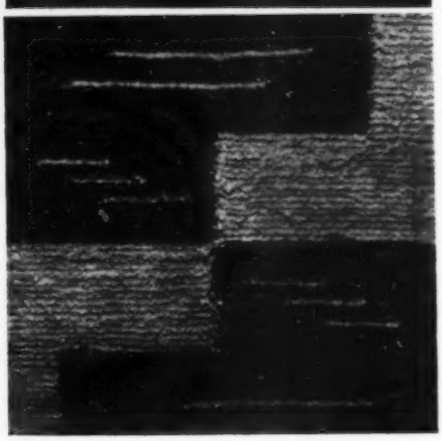
(*Continued from page* 40)



Detail of 6-foot, 3-panel screen of ash wood frame with panels woven of gray-green raffia with natural jute warp by Alfred Richard Barkley of Beverly Hills, California, shown at last spring's exhibition at Scripps College, California. Decorated vase thrown by Richard Petterson and decorated by Millard Sheets, both of the Scripps College faculty.

crafts will be included in the festival next year. Handwoven fabrics shown included a tapestry by Anni Albers; upholstery in cotton and rayon entitled "Geometrical" by Lili Blumenau; upholstery in leather and wool and drapery in linen and rayon by Gladys Rogers Brophil; jacket material and hanging by Jack Lenor Larsen; handwoven drapery of raw silk, cotton, and metallic and a machine interpretation by Goodall fabrics of a casement cloth by Dorothy Liebes; drapery of plastic, linen, and cotton by Lea Van P. Miller; drapery in silk, by Lea Van P. Miller; draperies by Elsa Regensteiner, Julia McVickers, Robert Sailors, and Jinny Lee Snow.





Above, evening skirt by Phyllis Fredkin, Scripps College student. Gray rayon boucle background, bands of white raw silk, two widths of gold metallic, turquoise metallic, variety of treadlings.

Below, loop rug in gray, beige, and cream, by Ann Blanch, Scripps College, part of a thesis project, weaving for modern architecture, which also included drapery and upholstery.

(*Continued from page* 25)

recent years and is still gaining new applications in all fields.

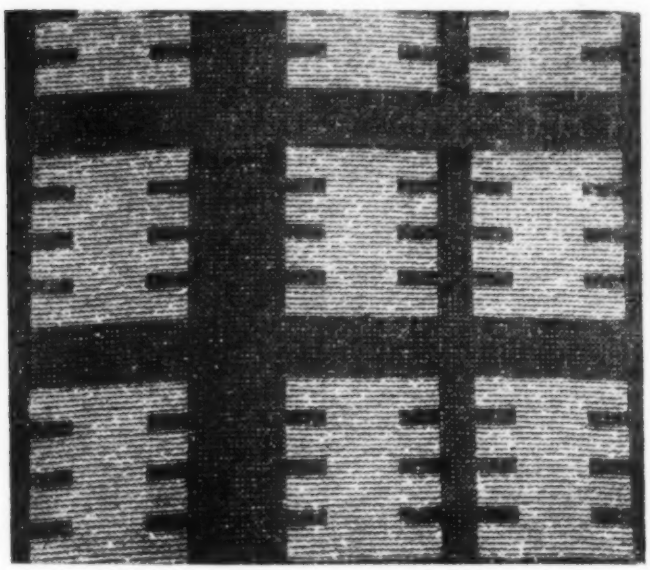
In prehistoric and early historic days cotton was woven into the most beautiful and luxurious fabrics ever produced by man. Techniques have been applied which today are often considered a lost art, and which man strives in vain to copy or imitate on his modern, highly complicated looms. Despite all their technical progress, modern weavers have not yet been able to reproduce the techniques applied in ancient times in the Indus valley and the ancient Arabic world where the gossamer fine muslins were woven, or the old Peruvian textures created long before Inca days. In ancient times weavers produced fabrics not only beautiful but also perfectly constructed for their purpose.

I do not believe we should imitate old techniques or copy designs. We have today, with our modern techniques, possibilities the ancients did not have and we should make use of them. We should create new fabrics and make new applications of old ideas, produce new designs.

The big mills are not essentially adapted for creative design in textiles; they exist primarily for multiplication and mass production of fabrics. It is the handweaver who has to blaze the trail. He has the knowledge and the opportunity to create and develop designs freely, since he is not bound by the limitations of a power loom. The power loom weaver always has to think of technical limitations and efficient operation of equipment and plant, which require long runs and a minimum of setup time and cost. The handweaver's only limitation is the number of shafts on his loom and his own ingenuity and patience.

The handweaver's greatest advantage over the power loom weaver is that he has no limitations as to the numbers of shuttles, types or numbers of fillings he uses, whether he uses them in pick and pick or two and two

(*Continued on page* 48)



Drapery by Claire Freeman, in summer and winter weave. Warp mixed threads, blue green cotton and rayon and a greenish blue cotton with a finer bright blue thread to intensify the color. Pattern of pale yellow wool boucle and tabby bluish green cotton. Shown with the New York Society of Craftsmen.

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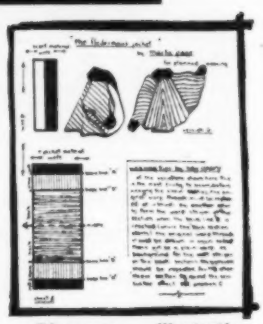

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- **Do not miss this introduction to Planned Weaving!**

(Continued from page 47)

or even four and five color pick and pick. It is true that the more simple the technical build up of a design is, the better the design. Few, if any, handweavers are making full use of all their possibilities.

Of the thousands of possible weaves I do not know of a single one that would not be suitable in one way or another for cotton fabrics. Most handweavers have 4 and 8-harness looms and so I shall try to describe mainly weaves and techniques that can be produced on such looms. The basic weaves are: tabby, where every raiser of the weave touches 4 others; twill, where each binding point touches two others forming a diagonal and satin, where no two binding points touch. These weaves can, of course, be altered, combined, and mutated to give various effects. As an example take a plain weave, use as warp a fine cotton yarn, say 80 ends of 60/2 and try as filling (1) 60/2, (2) 10/1 or (3) a nub yarn of about 2500 yards per pound. At (1) you will get a high grade print cloth for dress material or blouse material with almost square construction. At (2) you will get a repp of considerable stiffness that might be suitable for upholstery purposes and at (3) you will get a crepe-like fabric with repp-like effects which might be suitable for novelty dress fabrics if the nub yarn is soft enough or for upholstery.

The foregoing example, employing a fairly close set of fine thread warp, will give a warp effect fabric but the character of the fabric will be decided by the type of filling used. So far I have not mentioned color at all but the appropriate use of color applied to above example could give a large variety of designs.

In general, I would say there are two ways of designing. The design can be of color and weave structure only, employing standard yarns of one or more counts, or it can be formed by judicious use of novelty yarns. In either case the end use should be considered and the weave and setting selected accordingly. Every fabric should be firm, so that the threads won't slide. Floats should be just long enough to give the desired effect but not so long as to pull out. A fabric to be used for apparel or for draperies should be soft enough to drape well but not so soft that it is flabby. A special meter, to test and measure draping qualities of a fabric, was invented a few months ago and is said to be already widely in use. One should also consider whether the use of the fabric will involve a great deal of rubbing and/or friction. The more rubbing and friction the tighter the weave should be and the more firmly twisted the yarns that form the face of the fabric.

I need not stress that any number of different types of yarns can be combined to make a fabric. Very interesting upholstery fabrics can be obtained by combining straight low count cotton yarn and cotton ratinés in warp and for filling a heavy nub or chenille yarn. A close set fine cotton yarn with just a few odd ends of cotton ratiné or boucle in warp and similar filling or a fine 2-color flake yarn as filling would make an attractive and interesting dress fabric. Cotton need not be used alone. Odd threads of different yarns could be introduced to highlight the inherent beauty and characteristics of cotton. Take a few threads of metal or silk for example or some threads of angora or mohair.

(Continued on page 49)

Not every fabric woven on a handloom or developed by a handweaver need have a formal design. It can be a plain fabric for a specific purpose. A handweaver might develop fabrics that are water-repellent by their construction without special treatment, and still allow air to penetrate them. As a matter of fact that is what the British Ventile fabrics do and these were developed by handweavers in conjunction with a research group. It was, as far as I know, a handweaver who, in Hungary, developed a system of using leno weaves in such a manner that the twisting warp makes the face of the fabric with the filling lying on the underside of it. By using a creel with individual spools in pile fabric fashion for the twisting warp he makes 3 and 4-frame tapestry designs. These designs and techniques were developed, I was told, by a handweaver and to-day the inventor owns several big mills with special built power-looms which produce only fabrics in this special technique. If you have a loom with two beams you can use any of the pile fabric techniques.

It is certainly not necessary to combine silk, wool, linen, jute and perhaps two novelty yarns to get an original and exciting fabric. Cotton alone can be used for that purpose. While I am writing this reports are published of still another new type of cotton yarn and fabrics—partially acetylated cotton—which has vastly improved qualities.

Mrs. Florine Sondergaard, president, Redwood Empire Weavers, Santa Rosa, Calif. With prizewinning apron. Set 15 to inch, woven of 10/2 cotton in tabby, with band of mock leno, six threads crossed, in 10/2 maroon mercerized cotton, border and belt maroon, rosepath variation.

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Multi-Loom

(*Continued from page* 11)

top of the frame by cords (No. 18 seine cord was used). From their attachment on the top heddle sticks these cords come up through holes in the top and pass over the corner and down the side through slotted holes. They are then knotted and end in small wooden balls. In the original model these were made from wooden beads. When the ball is pulled down, the harness frame is lifted and the knot passes through the hole but catches in the slot holding the frame in place. All this is shown quite clearly in Figure 4. In this photograph frames one and three have been lifted. Upon releasing the knot, the frame is pulled back into neutral position by an elastic attached from the bottom of the frame to the lower heddle stick. Round hat elastic works nicely for this and Figure 2 shows them clearly. Again string heddles are used and to prevent their being lost off the heddle sticks when the harnesses are removed to let the rack serve in its capacity of spool rack, small holes were drilled in each end of each heddle stick through which a string was passed and they were tied on.

Another craft for which a frame is needed is cord knotting and it was found that the rear frame or back end of the loom would do very nicely for this by the addition of three pieces of wood. Two pieces like small lease sticks were bolted on to hold the starting cords. In order to knot successfully there must be some way of holding the standard cords taut while tying the knot. Saw cuts were made in a piece of hardwood and this was screwed fast to the end. Since this does not interfere with the operation of the loom it was left in place permanently. The small sticks were lined with leather to keep the cords from slipping. Figure 5 shows the setup in use for knotting a belt.

When the beater, castle, and cloth and warp beams are removed there is a sturdy rectangular frame left. One of the nice things about the multi-loom is that these parts can be removed even after they are threaded and the weaving started, if the warp and webb are carefully rolled up and tied to the beater and castle assemblage. This rectangular frame can be used as a hooked rug frame as shown in Figure 6. Strips of burlap or monk's cloth (the picture shows strips of a feed bag) are wound on lease sticks which can be bolted to the tops of the ends of the frame. The sides are tied to the sides of the frame with strips of old stockings. The long strips when finished can be sewed together for a rug. This same arrangement can be used for quilting or some types of embroidery as well as to hold the warps for tablet weaving.

The original model was designed for a 12-inch reed which of course limits the width of the weaving to fairly narrow projects, but it is ideal for experimental work and many attractive small projects can be woven. In fact the original model now has a second set of cloth and warp beams and a second beater so that both a 2-harness and a 4-harness tieup are always available. The versatility of the multi-loom overcomes the drawback of limitation of size in its appeal for the beginner craftsman.

Built of soft wood, the multi-loom is light to carry. The whole thing packs up into a case 20 inches by 17 inches by 8 inches. If kept well shellacked and waxed the loom should wear reasonably well. Some people may prefer to use steel heddle bars and metal heddles and metal ratchet wheels instead of the plastic take-up wheels. Even with these changes and allowing for present high prices, the multi-loom can be built for under ten dollars.

If you are inclined to build a multi-loom, the author hopes you enjoy the building and use of it as much as she has hers.

Miss Brokaw is instructor for training of occupational therapy students in the College of Physicians and Surgeons, Columbia University. She first became interested in crafts as a child when she was responsible for amusing a crippled brother every day after school. It was much more fun to play with things that they made than with toys. She became absorbed in crafts because she always enjoyed learning how to do things much more than playing games. Her first professional work was as an interior decorator, first in a New York shop and then, after a course in the New York School of Interior Decoration, in partnership with a schoolmate in Plainfield, New Jersey for eleven years. They made draperies, slip covers, lamp shades and other accessories in their own workrooms. Her

(*Continued on page* 51)

Engleman

(*Continued from page* 45)

better. A 30-inch brush would be much better than the one she used. At the end of each 21 shots, Mrs. Engleman put in the white laid-in sections, using a rayon rug yarn, which she clipped off level with the rest of the rug. This gave a continuity to the carpet, since the different shades of the colors varied in weight, some thick and some quite thin. Using this method Mrs. Engleman found that she could weave eight linear inches per hour. It took about 258 hours to weave the livingroom carpet.

The finished rug has a textured effect which makes it more interesting than if the laid-in had been omitted. She wove the material in 25-foot strips and then had an experienced carpet layer sew them together at his shop. The carpet in the living room was laid wall to wall over a thick pad.

In addition to weaving on commission and teaching, she weaves a great deal for her own home, for her husband, who is flight superintendent for American Airlines, and for her two daughters, Dottie, 16, and Christine, 11. She studied with Mrs. Mildred Perrigo of Oconomowoc, Wisconsin.

Rugs

(*Continued from page* 44)

material which, though hidden in the pile, nevertheless affects the quality of it. Metallic threads always are put in the weft, never in pile.

In the old rugs at least one weft thread is put in after each row of knots and more commonly two. Two rows of knots are rarely left unseparated. The shed is reversed for each weft shot. Two rows of knots, with the weft threads, are required for an exact "repeat" of the weave. When the warp lies on two levels the less sinuous shot is usually put in first so that the more sinuous lies next to the free ends of the knots. (When the warp is on one level, the weft threads are slightly and equally sinuous, but when it is on two levels, the weft thread shot through one shed is much less sinuous than through the reverse shed.)

Pleasing textures may be obtained with from 25 to 50 knots to the square inch. One hundred knots to the inch is a large number for a western weaver.

In the older carpets the number of knots may vary from 20 to 600 to the square inch. One exceptional modern specimen runs as high as 1,000. The labor required for making the carpet depends upon the number of knots. While the fineness of texture depends upon the number of knots, there is little advantage in too fine carpets, especially for modern use.

Multi-Loom

(*Continued from page* 50)

interest in handicapped persons led her into occupational therapy. She studied at the Philadelphia School of Occupational Therapy and upon graduation she established an occupational therapy department in the convalescent hospital maintained by the New York Society for the Ruptured and Crippled at New Dorp, Staten Island. Then for six years she directed the department at the main hospital in New York, now the Hospital for Special Surgery. At the same time she became associated with the occupational therapy training courses at Columbia University. Her classes are held at the Institute for Crippled and Disabled.

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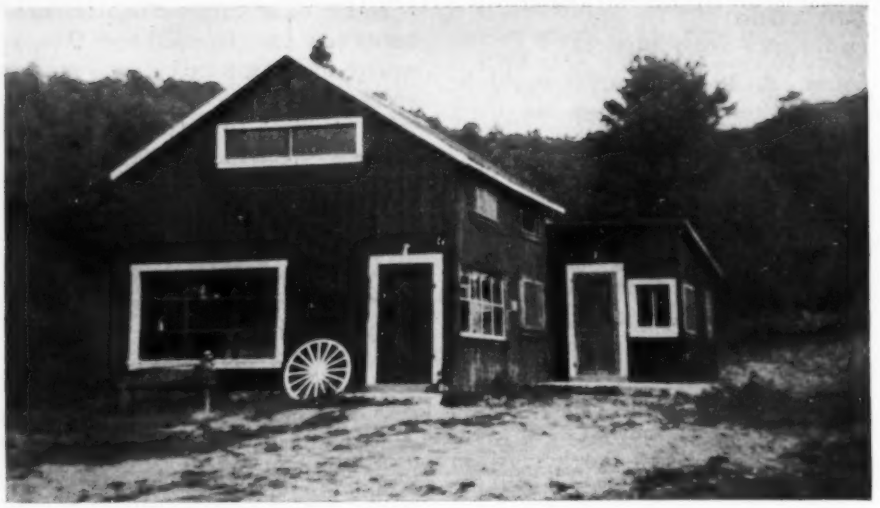

REDHORSE STUDIO

Four miles from Warren, Pennsylvania, and two miles off the main highway, an old red barn on a wooded hill houses the Redhorse Farm craft studio, opened some eight months ago by two experienced weavers, Mrs. James Conner and Mrs. Curtis Roberts. Far from art or craft centers, in northwestern Pennsylvania where there had been little interest in crafts, the owners couldn't help but wonder if customers and students—for they planned to teach—would find their way to this rather remote spot.

The studio in the barn, marked by a figure of a spirited horse for a weathervane, an interior with picturesque handhewn beams, and a picture window framing a beautiful view, has proved a successful adventure.

Looms and equipment for other crafts are housed in the hayloft, along with an interesting collection of antique equipment used by early craftsmen.

Mrs. Conner and Mrs. Roberts produce a wide variety of apparel and home furnishings materials as well as teaching classes in weaving, spinning, leather tooling and carving, silk screen printing, tole painting, block printing, and other crafts. They are also in demand as lecturers in the craft field.

Mrs. Conner first became interested in crafts when a student at boarding school in Philadelphia. She has since studied under several well-known weavers and while living in Puerto Rico she conducted a school in weaving for the natives. Mrs. Roberts attended the College of Arts and Crafts in Oakland, California, and served for two years in the Arts and Skills Department of the San Francisco Red Cross. She has taught crafts in several hospitals.

Because this was a new venture in a section of the country that was not well acquainted with handweaving these weavers prepared for their studio opening a supply of small articles such as pincushions, eyeglass cases, small purses, bookmarks, cocktail napkins and linen towels; also novelty articles such as their unique Date Skirts, Starlight Stoles, and Table Toppers. They made samples of place mats, wool suitings, upholstery and drapery fabrics as a test to see what would be the most marketable items in this area. Their first six months of business at the studio showed the surprising result that all of the items were popular. Consequently the production continues in all of these lines.

Versatility in weaving is essential, they say. Modern weavers who look askance at traditional patterns are losing much of the beauty and richness of the craft while the weaver who limits himself to the many variations of one traditional pattern will not be aware of the many possibilities offered by novelty threads for unusual textured effects.

Craft exhibits and lectures have helped to make the public aware of the Redhorse Farm Studio. This venture may be proof that good weaving will sell profitably, even though the location is far from the art centers or specialty shops of the cities. It is the more remote sections that need the crafts and that welcome wholeheartedly a new industry of this kind.

Competition

(*Continued from page* 35)

The originator of these awards was Maurice B. Robinson, then as now editor-publisher of *Scholastic Magazines,* New York. In his trips around the country, he was struck with the fact that, except for the valedictorian, high school athletics received almost all special honors and attention. "Why not awards for non-athletic skills?" he asked.

The first announcement of the art awards flooded the small Pittsburgh office of the magazine with entries and in desperation the staff asked the Carnegie Institute for space to unpack and to do preliminary judging. Final judging was done in New York the first year by three famous artists —Eugene Speicher, Robert Henri, and John Sloan. They were so impressed with the work that they urged *Scholastic* to extend the scope of art awards. Carnegie Institute offered its galleries for exhibits where the national show has been held ever since.

Because of increasing interest, classifications were expanded. Industry sponsors—manufacturers of art materials and others—became interested and now number 19. Cash awards now amount to $15,000.

Directors of art schools on the jury in 1931 were so impressed with some student work that they decided to offer scholarships and from that beginning the scholarship program has grown. Twenty of the judges for this year's exhibition, all well-known in the art world, are former scholarship winners.

In 1940 regional exhibitions were initiated because of the increasing number of entries and also in order to give an opportunity to more students to see part of the exhibition. Department stores in large cities were asked to sponsor these, which are held prior to the Pittsburgh show.

Karl Bolander, formerly director of the Columbus, Ohio, Art Gallery was asked to become national director of the art awards and Miss Jennie Copeland now serves as executive secretary in New York.

There are now 40 regionally sponsored exhibitions, most of them financed by department stores which also provide exhibition space. A committee of art patrons and teachers aids the sponsor. Regional juries, experts in the different fields, examine from 1,000 to 10,000 entries annually from which work is chosen for exhibition and gold key awards.

Pieces awarded gold achievement keys by regional juries are forwarded to Carnegie Institute for national judging. For areas where there was no regional shows, entries are carefully screened in Pittsbugh by a preliminary jury, who followed the same high standards as the regional juries in selecting the work for the final juries.

Students submitted over 125,000 entries for Scholastic Art Awards this year. About 25,000 pieces won places in regional exhibitions. Of these, 8,000 key-winners came to Pittsburgh for national judging, as well as about 500 portfolios competing for scholarships. Added to this number coming to Carnegie Institute were thousands of entries from unsponsored areas which came before the preliminary jury.

The Scholastic Awards project is not a "talent search," according to its sponsors. The discovery of talented young artists is only a by-product. This program, it is believed, helps raise the level of appreciation and thus the national taste in art. It helps train millions of eyes to recognize beauty, to be dissatisfied with the shoddy. In the sponsors' opinion, the most appreciative audiences are the amateurs, and the advancement of the arts is primarily dependent upon the number and the taste of the "appreciators;" for they are the consumers, the patrons, without whom the arts cannot survive.

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Carter

(*Continued from page* 15)

the movable pivots.

Another system of rising shed motion involves no jacks at all but makes a direct connection between harnesses and lams through a system of cords and pulleys (Figure 6). The cords pass over the several sets of pulleys and down the outside of the top castle cape and connect to the free extremity of a pivot lam. The pivot point is on the opposite side of the loom. This set of lams is connected through intermediate or compensating lams to the treadles. Due to the great amount of friction and inertia developed by this system, it is usually necessary to weight the frames or attach springs to keep them in the bottom shed position. The weaver must move all of these cords and levers and also work against the added springs or weights. The system is not to be considered by one in delicate physical condition. In addition, cords and pulleys have the inherent faculty of becoming fouled or stretching out of adjustment just as we are ready to do our best.

There are several other systems of rising shed motions, but they are rare and complicated, Jacquard and draw looms fall into this category. The novice should not even consider them.

The foregoing has dealt entirely with floor looms; however, many of us must confine our consideration to table looms due to limitations of space, finances, or other factors. There are several good table looms on the market; but we do not believe that the average craftsman should attempt the construction of his own table loom, except the simplest type. However, these can be purchased so cheaply that it is foolish to attempt even that. (A stamped, self-addressed envelope with your letter will bring specific information.) The main problem in building a table loom is to obtain suitable parts. The small, specially designed parts are usually patented or obtainable only from the loom manufacturers, who are justifiably reluctant to furnish them to amateur loom builders. We discuss table looms under this heading because the rising shed is about the only practical harness motion for this type of loom. The most popular and what I consider the best table loom on the market uses levers connected directly to the harness frames (metal) through wire bridles. These levers are automatically locked in the desired weaving position and are released simultaneously when the next shed is selected. Some of the others use cords passing over pulleys, and there are several intricate lever arrangements, but they all have the drawback of using small cords which stretch and foul in the pulleys and are otherwise usually out of adjustment. An added disadvantage is that they are manually locked and released, which contributes to delays and mistakes. If there were any substantial saving in cost between the latter types and those first mentioned, it might be a factor in their favor; but many actually cost more. There are several makes of 2-harness, roller-type looms on the market, which are suitable for only the most elementary work; hence the primary consideration is cost.

2. The *sinking shed* is created by lowering the required frames from their normal position at the top of the shed, where they are suspended by springs or a system of pulleys, ropes, and weights. The sinking shed is not common, nor has it any features to make it popular. It is often confused with the counterbalanced shed, an explanation of which follows.

3. The third system of harness motions is the *counterbalanced shed*. From the standpoint of functional efficiency and low construction cost, this is the best type of harness motion. The only objection is the cumbersome construction necessary to support the system. There have been attempts to overcome this by the use of supplemental pulleys, but this immediately eliminates the simplicity of feature; further, some of the pulleys must operate in a horizontal position, and the roller action which is essential to keep the frames straight must be sacrificed. Never buy a loom with pulleys in a horizontal position unless you are a glutton for punishment.

The counterbalanced motion is often confused with the sinking shed motion because of identical tie-up and treadling; however, the operating principles are entirely different. The frames are suspended in a neutral position (no shed) by cords passing over rollers(or in some cases pulleys or rocker levers called horses) in such a manner that each frame is balanced against another, and each pair in turn is balanced against another balanced pair; hence the name of the system. As you can see from Figure 7, this can be continued indefinitely by balancing larger groups. Or it may be varied to accommodate odd numbers of frames as in Figure 8 or even numbers not in the 2, 4, 8, . . . series as in Figure 9. The mechanical advantage of this system is that the harnesses return to the neutral position of their own accord, taking only half the effort, and consequently conserving the energy of the weaver. We advocate the use of rollers rather than pulleys or horses. They require no added effort to operate; they do not foul; and they keep the frames on an even keel. Weavers using the counterbalanced system must be able to gate (adjust) the loom properly, especially if unbalanced tie-ups are used. This is a rather intricate and involved process, which will be covered at a later date. The counterbalanced system is without doubt the most efficient for fast, even weaving with a minimum of effort. It is our preference, and its tremendous popularity is well deserved.

4. There is a fairly common combination of rising and sinking shed motion, wherein two sets of lams are used. The upper lams operate a short upper-jack rising shed system. The lower lams operate on a direct tie-up to the opposite harnesses in a sinking shed system. Each harness is therefore tied to both systems, and perfect adjustment is essential at all times. Figure 10 shows the principle applied to only one harness. It is a very complicated system, which involves at least a dozen points of tying for *each harness*, any of which can slip or wear at any time. The slight advantage of maintaining a constant, perfect shed is more than offset by the unholy job of keeping a myriad of ties in adjustment and repair. It will appeal to some advanced weavers, but the average novice should not become involved.

The following phases of loom construction and operation will be covered in the next issue: lams, straight and sectional warp beams, treadle systems, heddles, harness frames, beaters, shuttles, and a general summarization.

Readers who care to write Mr. Carter directly should address him in care of the Englewood Weavers, 447 West 60th Place, Chicago 21, Illinois.

Frey

(*Continued from page* 16)

hours shrink to minutes and a loom just does not understand time!

Does all this sound discouraging? It is not meant to be. I think I have a missionary zeal in encouraging people to weave. I think that every one should try it at least. But when you try it, be prepared to continue with it. And don't be afraid of the expense. The enthusiastic weaver will find a way around every obstacle. The electric mixer makes a good bobbin winder. A warping frame for a small warp is easily made with a few nails in the back of a closet door. A couple of dowels across the rungs of a chair make an acceptable spool rack. And the loom? I am still using one that I made in 1924.

Wellman

(*Continued from page* 27)

blue; cow and duck, red; kitten and squirrel, green; and pig and rabbit, yellow.

Inasmuch as the Weavers' Guild had expressed interest in the hanging of a show, I decided to throw in a demonstration of correct listing, pricing, and packing of an exhibition. Five cases were used, each numbered and containing a separate list of items therein. Two complete lists of shipment were sent to the gallery, giving number, description, price or N.F.S. (not for sale), whether or not possible to duplicate, and insurance value of each item.

Place mats were packed flat in a box to fit, thereby eliminating possible shifting and wrinkling of materials and napkins were numbered to correspond to mats. Lengths of fabrics were rolled on cardboard tubes longer than the width of material, to prevent puckered edges. Creases from folding frequently do not shake out.

Each item was marked with price or N.F.S. and numbered as to classification *corresponding* to the inventory listing.

Ceramics were packed in a wooden box made long enough to carry lamps with attached fixtures. Gallery employees seldom have time to assemble fixtures, which frequently arrive in a separate package. Solid rolls of corrugated paper were cut to fit between ceramic pieces, (plates, saucers, cups, and others) and each was wrapped separately in newspaper, to prevent shifting and friction.

Needless to say, I was gratified when unpacking the show to find the committee taking notes on placement and equally pleased when the items were returned, packed exactly as they had been shipped originally.

To weavers compiling future exhibits, may I suggest that you cooperate with the committee on installations and may they all be as efficient, generous and helpful as the group in Pittsburgh.

Thorpe

(*Continued from page* 19)

7. Now turn the cards one quarter turn toward you. Beat, insert weft, and repeat this until the "A" corners are in their original place again. Continue to alternate four quarter turns away and four quarter turns back until sufficient length has been woven. Then the warp is cut, cards removed and the strip sewn to a belt buckle.

As you examine your pattern, it will be noted that the red and yellow stripes which occur at the reversal of direction are wider than the black and white ones. Turn the work over, and the reverse is true.

Weaving by alternating the four quarter turns forward and back is the normal method of card weaving although one can vary this as desired with entirely different results. Indeed, herein lies the fascination of card weaving. There are so many possibilities for experimentation. One can see that variation may be achieved by a different way of stacking the cards just before the warp is threaded through the holes and also by a change in the arrangment of the cards just before the warp is removed from the chair legs.

As you work these things out you will want to explore the greater possibilities of this craft. Beautiful designs may be made by threading the cards to more than four colors. This necessitates that each card be threaded separately. Books and pamphlets giving directions for these patterns are available in hobby and craft book stores.

The method of warping the cards which is described here is not original. I am much indebted to Mary M. Atwater for her article which appeared many years ago in *The Weaver*, a magazine which is no longer published.

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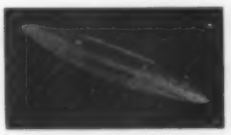

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Wisconsin Federation of Hand Weavers Sponsors State Show

The second annual exhibition sponsored by the Wisconsin Federation of Hand Weavers included 75 examples from work of both members and non-members selected by a jury composed of Milwaukee art teachers. It was shown during June at the Milwaukee public Library. Members of the jury were Miss Stella Harlos and Mrs. Josephine Strong of the Layton School of Art and Miss Dorothy Meredith, art and weaving teacher at Peckham Junior High School.

Illustrated here is representative work, reading from top down, left to right: stole, black, silver, Mrs. Dorothea Buell; place mat, natural linen crash, dark orange border, napkin dark orange, first prize, Mrs. Lillian Swawite; place mat (back) natural linen, Mrs. Ida Brower; runner, various shades of brown and orange, yarns of mixed types and weights, first prize, miscellaneous class, Mrs. Carl Skupski.

White wool stole, lace inserts in silver, first prize, Mrs. Buell; green and gold plaid stole, Mrs. Swawite; white drapery, mercerized warp, slub rayon weft, Mrs. Ruth Wrensch.

Drapery, white warp, white cotton and gold metallic weft, Mrs. Buell; cotton apron, white warp, green weft, white border third prize, Mrs. Florence Horn; white and gold metallic handbag, first prize, Mrs. Grandon Gates; black and gold metallic handbag, Mrs. Blanche Wick, green and yellow linen place mat, gold metallic, Mrs. John Erickson.

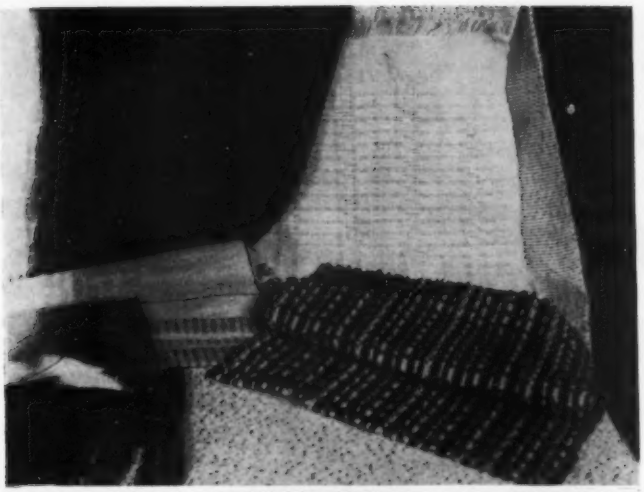
Best in show, all white drapery, mercerized warp, cotton weft of various weights and first prize, drapery, Mrs. Louis LeMieux; runner, mercerized warp, various colors, varnished and stained bass wood slats, second prize, miscellaneous, Mrs. Margaret De Bois.

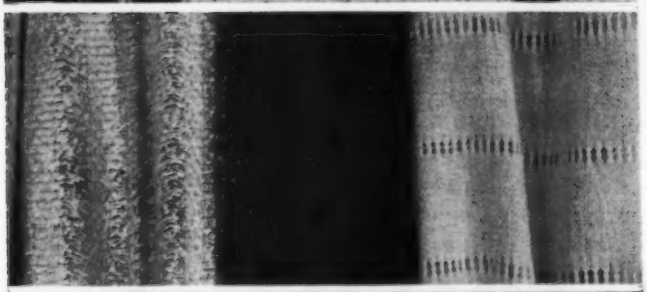
Dress fabric, white warp, white and nubby green rayon alternating in weft, Mrs. Alice Nitz; place mat, gray linen boucle, green leaf pattern border, Mrs. DeBois; belt, aqua and white, galloon third prize miscellaneous, Mrs. Dorothy Nickel; place mat, various warps, brown reed weft, rayon ratine, third prize, mats, Mrs. Loretta Kossow; lamp shade varied warps, brown weft, rayon ratine binder, Miss Emma Ramos.

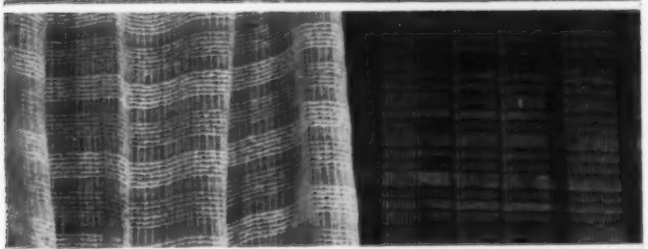
First awards not illustrated included: dress fabric, Mrs. David Richards; tablecloth, Mrs. Arthur Schmidt; towels, Mrs. Ottilie Dobberpuhl; rug, Mrs. LeMieux; baby articles, Mrs. Helen Anderson; and Mrs. Nickel; apron, Mrs. Swawite; skirt, Mrs. George Schafer.

In selecting articles for exhibition, the judges stressed the proper finishing of handwoven material, use of color, and proper proportion in design. Place mats and rugs were judged as to their ability to "stay on the table" and on the floor. Traditional use of traditional patterns was ruled out although adaptation of old patterns to modern treatments was considered. The purpose of the exhibition is to encourage experimentation with fibers and original design.

Members of the federation exhibited work at the Wisconsin State Fair and will be represented at the Wisconsin Designer-Craftsman exhibition at the Milwaukee museum in November.







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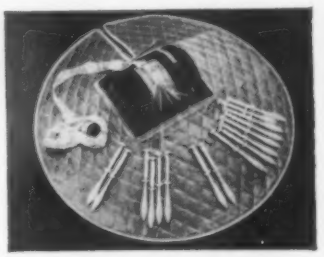

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Handweaver & Craftsman

Bryan

(*Continued from page* 8)

was the result of the combined efforts of decorator Bryce Boers, designer Gene Marker and two weavers, Elsie Wood and Ruth Howard. The same light and dark yellow-green chenille with slightly different backgrounds was used by Mrs. Wood for accent in the 2-block set-up for her upholstery and by Miss Howard for a wide border on her drapery fabric. Mrs. Wood also made placemats of split bamboo and reed, both dyed yellow-green, on a warp of gold, yellow-green and black in chenille and rayon novelty yarns. With the mats were green linen napkins with a narrow border obtained by a different treadling, also woven by Mrs. Wood.

Frances Morgan picked up the colors in a painting for the sofa upholstery, also shown here, for a period setting designed by Berenice Luce. Mrs. Morgan also wove the fabric for two lampshades and a chair using a faint touch of gold metallic with novelty yarns to get textured effects—white for the lampshades and pale blue and gray for the chair.

A fanciful patio room, designed by Barbara Chevalier in a black and white decor, had for a color note Italian black lacquered chairs with cyclamen pink upholstery woven by Rosemary Antonacci. She combined black and wine linen warp with weft of lavender dull cotton, bright pink rayon and lavender looped mohair to achieve the blue-pink color. Shown in this setting was a panel for a screen woven of white mohair braid, about ½ inch wide, on a fine warp of black novelty rayon, by Margarita Robinson.

A black and gold plastic screen in a black wood frame by Constance Tydeman created considerable interest because of its originality and beauty. Using an original set-up, she alternated the order of the warp and weft arrangement to form a large 2-block pattern. The warp was smooth white rayon, gold metallic braid, gold rayon boucle, and black chenille and the weft black and gold plastic, gold yarn, and white rayon boucle.

For an interior by Norma Lincoln, Margaret Kingston wove a hanging of fine peeled bamboo in gray-green and straw colors on a group arrangement of greenish-gray and orange tones in medium fine yarns of chenille, shining rayon, cellophane and gold metallic. Harmonizing with the hanging was a sheer casement fabric of grayed yellow-green looped mohair and rough and smooth rayons and cottons, woven with a light beat on an open-sleyed warp.

By a special handling of heddles, Ella Parker achieved an asymmetrical design in a summer and winter weave for chair upholstery. Using rayon and cotton yarns with rough spins, she arranged groupings of various sized rectangles in coral, chartreuse, gold and greens. With this she showed a sheer drapery fabric that combined natural mohair with pale yellow, chartreuse, and olive rayons and tan cotton warp with weft of very fine rayon and looped mohair in natural and beige, accented by rows of very heavy yellow and green rayon that was wrapped around the warp threads.

An unusual note in this show was the 16-harness designs used by Mr. and Mrs. F. J. Ahrens. Mr. Ahrens produced a small checked pattern by alternating squares of warp skips with diagonal weave in his creamy white drapery fabric. Mrs. Ahrens used a diamond border pattern for a set of linen towels.

Another example of Lea Miller's experiments with gauze weave, as usual, created considerable interest. This one, a particularly lovely example, had a warp of pearl cotton in fine stripes of yellow-green and grayed-orange and weft composed of inch wide tabby stripes in light gray pearl and dark gray nub breaking 10 inch bands of gauze weave.

Among the pieces of yardage shown were drapery fabrics in wide variety, upholstery, and clothing, mostly wools. The made-up pieces were mainly stoles with a few aprons and skirts. According to a report made at a luncheon soon after the opening, the jury gave long and careful consideration to the fabrics submitted, judging them on the basis of whether they could be duplicated on a machine and suitability for intended use. In addition the quality of color and design entered into the consideration of every piece.

In view of the fact that most handwoven fabrics can be duplicated on the machine, the first consideration must be interpreted to mean that such fabrics were not likely to be found in stores, owing to original use of yarns and yarn combinations. According to comments concerning the clothing fabrics there were some who did not agree with the jury, being of the opinion that although of good design and execution, the fabrics might have been done on a power loom. All exhibits could be easily handled and in contrast with those in the Third Annual, there was very little use of braids and ribbons. In addition to selecting drapery and casements on the basis of obvious qualities, only wide pieces were chosen since it was considered that with fewer seams they would hang better. Stoles were tried on and considered for length, width, texture, both in regard to appearance and to feel against the skin, and for suitability for daytime and evening wear.

Dr. Elisabeth Moses, curator of decorative arts at the museum, reported that installation was a pure joy because the fabrics were easily handled and that the tremendous response of the public was very gratifying.

Marge Krecjik was chairman of the jury and members included: Eleanor M. Forbes, interior decorator of Gump's; Ralph Higbee, designer and weaver, Dorothy Liebes Studio; Frances Lesley, apparel designer; Harry Lawenda, interior designer, Kneedler-Fauchere; all of San Francisco, and Ed Rossbach, instructor in handweaving in the decorative art department, University of California, Berkeley.

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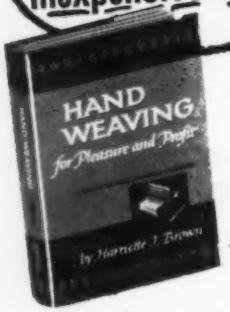

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Larsen

(*Continued from page* 6)

beaten in and around it. A curved line is achieved in the same manner with a great deal of charm and little or no inter-joining. We wonder if there will turn up in American tapestry some weaving Grandma Moseses—women brave enough to stop weaving "gifties" and experiment in primitive expression and technique.

Tapestry or Inlay also have significance in elaboration upon other weaves. A plaid, for instance, with an inlay on some of the sections, will become quite distinct in character without resulting in many headaches or finger cramps for the weaver. In every case the variety of contemporary yarns and fibers can be relied on, simple yarns perhaps, but not those obvious constructions which will detract from an interesting enough technique. A fabric I have long imagined would be a sheer background with large,—really large—areas of superimposed inlay, put in under sheds controlled by the threading.

Another application, certainly, of tapestry is in rug weaving. Here, with good enough yarns or rags, we can produce a piece serviceable and decorative and worthy of the effort. In designing for this type of tapestry, a small sample to show the effect of the technique can be used in combination with a full scaled sketch which shows the proportions.

For a "contemporary weaver" to know about, talk about, or suggest weaving techniques, is perhaps scandalous in some circles. I will say my feeling is that pattern weaving was discredited because of its tendency toward dizzy dark and light pattern—not in keeping with our need for restful surroundings. This restlessness was aggravated in patterns not adhering to the geometric nature of a vertical warp and horizontal weft. The reactionary, uncreative character of the recipe books was a point against pattern as was the weaver's failure to realize that the power loom dobby can produce any pattern at one hundred yards a day, but has a much more difficult time with some of the sensuous hand spuns and other exotic yarns available to the hand weaver.

Now will be the turning, but not the turning back. The new pattern weaves will be weaver-designed and expressive. They will be architectural with flat areas rather than spotty ones. If they have virtue, their virtue will lie in the fabric and not in nostalgia or in reverence for "the work that went into it." They will excel as a construction of yarns, more important than the technique of construction. The yarns themselves will not be the deadly, tight-twisted threads, but will reveal fiber as did the gothic tapestries, Japanese grass cloths, and Peruvian linen.

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WEAVER'S BOOKSHELF

The books reviewed in the following pages are those Handweaver & Craftsman believes will be of value to weavers both in their own craft and in related fields which are of importance to them. Many of the reference books could be profitably purchased for guild libraries.

Swedish Weaving

Many of our readers will be happy to hear that the long out of print "big" Swedish book on weaving by Mary Block is now again available. This outstanding book covers practically the entire field—the only thing further you might need is a Swedish-English dictionary. There are 360 illustration, 207 in rich full color, besides hundreds of drafts and detail photographs of various weaves. Basic pattern instructions are given for 2-harness looms, as well as for multiple-harness looms, and the book is designed for both the beginner and for the more advanced weaver. The illustrations are so clear that the average weaver can readily follow the directions without a knowledge of Swedish. There are chapters on pattern analysis, pattern drawing, vegetable dyes, rolakan, besides several other inlay techniques, chenille, and Gobelin tapestry.

Possibly no one book can completely cover any field but this handbook is admittedly one of the most comprehensive treatises on the subject of handweaving which has so far appeared and will be a handsome and ever useful addition to any weaver's library.

Den Stroa Vavboken by Mary Block. Published in Stockholm. Available through Museum Books, New York City 17. 321 pages. 7¾ x 11. $15.00.

Number Knitting

Ready October 30 will be Virginia Woods Bellamy's book on Number Knitting, giving a complete description of her new patented all-way stretch method. It has many diagrams and illustrations of the different types of articles which can be made by this method, which requires much less time and less material than the traditional method.

Number knitting is a method of design, she says in the introduction, which makes a fabric knitted by units—squares, triangles, and rectangles picked up one from the other —that will stretch in any direction and yet pull back into shape by itself. Hence the units of the number knitting produce a circular stretch and a cross stretch, or what may be called an all-way stretch fabric. Units usually are made in a much looser stitch than is used in regular knitting yet they achieve a stability previously possible only for tight knitting. Very light, cobwebby effects may be achieved especially desirable for scarfs, blouses, and children's garments. For greater warmth she uses heavier yarn but the same loose stitch.

Her invention of the method came about because she was dissatisfied with the results of her first knitting and began to experiment, working with designs in squares and triangles, and achieving results she did not expect. When she discovered the uses of graph paper, she began to produce designs in mathematical squares, from which she developed her system.

The chapters deal with methods, tools, materials, and design. In all there are but seven units in number knitting—square, rectangle, triangle, divided squares and triangle, single and double wing units. Circles and other adapted units are possible. Any pictures that follow the lines of the

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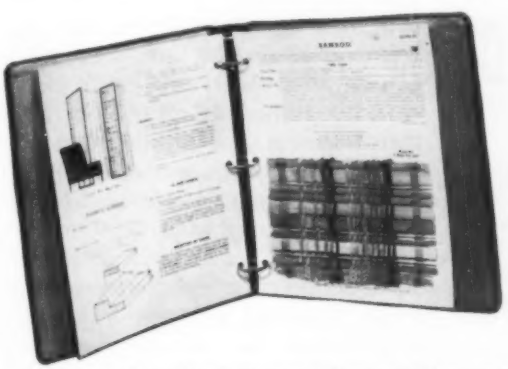
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graph paper may be broken up into these units and knitted by picking up each unit from the last one in numbered sequence. The final chapter is written for the adventurous knitter and gives instructions for making original designs.

The loose stitch of number knitting is better for wool, Mrs. Bellamy believes, because of the inherent qualities of the fiber, and enables the knitter to bring out the full beauty of the yarn. However, the method can be used advantageously for any kind of yarn, either natural fibers or synthetics.

"Number Knitting—A New Way with an Old Art," by Louise Llewellyn Jarecka was published in the Winter, 1950-51 issue of *Handweaver & Craftsman.*

Number Knitting by Virginia Woods Bellamy. Crown Publishers Inc., New York. 6¾ by 9, 256 pp. 80 diagrams, 150 illustrations, $3.95.

Peruvian Weaving

To the many readers who enjoyed the articles in our Summer issue on Peruvian weaving by Junius Bird and Lili Blumenau, this outstanding book on the subject by Doering will be most welcome. Of the 400 beautiful black and white illustrations, over fifty of them and all four of the full color illustrations are on weaving. For these ancient people, "weaving in itself may have been a magical performance" and "the symbols however abbreviated were understood in their time." Some exquisite examples of feather work are shown along with double weaving, "Gobelin" tapestry and the more usual forms of weaving done in cotton and vicuna, llama or alpaca wool. Blankets, veils, tapestries and cloaks are included, with designs almost always free from any realistic tendencies and which if placed in present day environment would be considered quite modern. If the design is not geometric it has been so highly conventionalized that its picture content is not readily discernible. As inspiraton the Peruvian designer used the material at hand—condors, jaguars, fish, snakes, fruit trees, rain and lightning—and also often brings into play his designer's imagination and uses double headed eagles or demons of endless varieties. Even when pure abstract or geometric motifs have been used they show much more ingenuity than usually displayed today. Besides the actual weaving there is also rich material for the creative designer in the simple forms found in the illustrations of ceramics and metal work. From a physical standpoint the book, which was printed in Germany, has remarkably clear illustrations both in black and white and full color. The text is done on an uncoated paper to facilitate more pleasant reading. To anyone who may desire to explore the sophisticated and colorful weaving of the Peruvians or who is looking for a fresh vista in design, this book is heartily recommended.

The Art of Ancient Peru by Heinrich Obbelohde-Doering. Published by Frederick A. Praeger, New York 18, N. Y. 56 pages of text, 240 pages of illustrations, 4 in full color. 8½ x 10¾. $12.50.

Geometric Designs

THIS exhaustive alphabet of geometric design includes 1836 examples which have been beautifully redrawn by the author. As Professor Hamlin of Columbia University states in his foreword, "The designer of textiles time and time again has sought in vain for such a reference book."

This handbook is essentially a source book for workers and, in the case of the interlacement designs, the original inspiration undoubtedly came from the weavers variation of patterns. The numerous types of geometric designs shown include those based on the circle, the square, the snow flake, the triangle, the cross and the several star forms. Both the European heraldic ordinaries and those of the Japanese family token or *mon* are shown in many variants. All the motifs have been very accurately drawn in solid black and white and this handbook should prove to be an ever ready source of information and inspiration to the creative handweaver.

Handbook of Designs and Devices by Clarence P. Hornung. Dover Publications, New York. 218 pages, 1836 illustrations. Cloth $3.95, paper $1.90.

Braiding

As the author of this manual points out in his first chapter, the process of braiding "seems to have been one of man's earliest accomplishments." He

also suggests that probably it was through the practice of braiding hair, grasses or strips of leather that prehistoric man first came to the more intricate job of weaving. As there were no tools required in braiding there have been none to come down to us from any prehistoric period. The braiding of hair, both male and female, is historically traced down to our own Revolutionary period. The collar on the naval enlisted man still remains as mute evidence of the tarred pigtail of that virile era. The possible materials which one can use are listed along with a few words of advice if one is to avoid the early pitfalls of braiding. Flat braiding is described, both in text and by excellent diagrams, for various multiple strands, when used singly or in groups, or again when weaving over stationary strands. The latter part of the book is devoted to practical problems in braiding—rugs, sandals, hats, belts and also a few articles of solid braiding—bracelets, dog leashes and belts. The book concludes with the intricacies of knotting.

As a creator of interest in handcrafts and also for the joy of creating something with your own hands, this book should be helpful to both young and old.

Braiding and Knotting for Amateurs by Constantine A. Belash. Published by Charles T. Branford Company, Boston. 5 by 7¼, 133 pages, $1.75.

Hand-Made Flowers

According to the author of this handbook there is a revival of interest in the art of flower making as practiced in Europe around the seventeenth century, and certainly their fabrication has always been a challenge to anyone's dexterity, patience, and taste. Clara Kebbell, the author, takes as her motto the broader implication of a statement by Paul Nash, a contemporary British painter, who said, "when you paint nature observe with intelligence and interpret with imagination," and she then proceeds to show several of *her* flights of imagination made from silk, papier maché and feathers. The required tools and materials are listed and described and then the making of the several component parts of the flowers, in the various mediums, are taken up step by step. The book closes with some special flower projects executed for various uses by the author, and the showing of several outstanding examples of the seventeenth and eighteenth century flowers which are now in the Victoria and Albert Museum, London.

Flower Making by Clara Kebbell. The Studio Publications, London and New York. 5½ by 6½, 64 pages, $1.00.

German Handwork

IT is gratifying to the heart of an editor when the appearance of the magazine in a distant country brings an unsolicited response in the form of publications. Thus the office of HANDWEAVER AND CRAFTSMAN has welcomed the appearance of folders and small books from Bärenreiter-Verlag of Hessel, in the U. S. zone of Germany.

"Vom Handweben auf Einfachen Apparaten" (Handweaving with Simple Equipment) by Mia and Walter Kircher and "Wir Erfinden Stickereien" (We Discover Embroidery) by Monika and Albert Leist are both so well illustrated that ability to read the text is scarcely necessary. They are part of a series of workbooks issued for handcrafters in many fields. The quality of the photographs is excellent in both The weaving book contains a large pattern sheet inserted in the back cover. The weaving book is 3.60 RM (about 86 cents American money) and the embroidery book 2.80 RM (about 67 cents).

Two folders in a series of patterns for knitting and embroidery, also for weaving and different kinds of crocheting, each contain eight large loose sheets of patterns. No. 7 of the series shows designs adapted from the 18th and 19th centuries; No. 11 contains deer and horses in a great variety of stylized forms. The title in German is: STRICK- und STICK-MUSTER, Auch zum Weben, Häkeln, Knupfen. These are 1.50 RM (36 cents) apiece.

There are also two 4-page folders, available separately at .40 RM (10 cents), showing attractive designs for drawnwork on blouses.

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Ceramic National

(*Continued from page* 41)

the Ferro Corporation of Cleveland, Ohio, to be held at the Syracuse Museum November 9 through December 7. Selected works as usual will go on a year-long tour, circulated by the Syracuse Museum.

Included in $2450 in awards are six prizes totaling $750 offered by Commercial Decal, Inc., for the best dinnerware designs suitable for mass production.

An architectural citation will again be offered for the best example of the use of ceramic sculpture as an integral part of an architectural plan.

Members of the final jury are Richard B. Gump, merchant-designer, San Francisco; Dorothy Liebes, designer and weaver, New York; Thelma Frazier Winter, ceramist and sculptor, Cleveland; Kenneth Bates, enamelist, Cleveland; Jules Gulden, Onondaga Pottery Company, former owner of Herend porcelain factory, Budapest, Hungary. J. Byers Hays of Cleveland and Ivan Mestrovic, professor of sculpture, Syracuse University, will award the architectural citation.

Porcelain bowl, peach blow, designed and executed by Edna Vogel, well-known designer and weaver of rugs.

Bibliography for Rugs and Carpets, on page 30

Notes on Carpet-knotting and Weaving by C. E. C. Tattersall. Victoria and Albert Museum, London.
Notes on Weaving Techniques by Florence E. House. The Arts Cooperative Service, New York.
Oriental Textiles in Sweden by Agnes Geijer. Rosenkilde and Bagger, Copenhagen.

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Opportunities

(*Continued from page* 42)

on the handloom.

Miss Belin thinks there is a chance that the use of the multitudinous yarn combinations available to designers on the handloom will help to bring about a year-round market of new and original collections rather than the biennial ones that are now offered. The reduction of the cost of experimentation would make possible employment of more new ideas and would obviate the need for caution which results in the extensive repetition of designs.

The City College Textile Unit was convinced of this need in the spring of 1951 when it added a weaving program to the comprehensive coverage it now gives to the entire industry in a series of survey courses. Under Miss Belin's supervision the program has been extended to fit the needs of weavers of all kinds. A series of day and evening courses is included in the Midtown Business Center's winter program.

Miss Belin's handwoven material has been used by leading men's shops in California and New York. Her diagonal twill is so lightweight it is almost sheer—an excellent fabric for fine men's and women's clothing. Weaving comes as a birthright to Miss Belin whose forefathers were flax merchants in Europe. The women of the family for generations wove all their own household linens. As a child she grew up with looms all about her much as the average youngster now grows up surrounded by radios. Miss Belin says her grandmother and her six daughters designed and loomed the cloth which was used in making up their complete trousseaux. California weavers may recall her work which was shown at exhibits there.

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